

# Progress on Transboundary Water Cooperation

GLOBAL STATUS OF  
SDG INDICATOR 6.5.2  
AND ACCELERATION NEEDS

2021





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SDG indicator 6.5.2  
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# Presenting the UN-Water Integrated Monitoring Initiative for SDG 6

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Through the UN-Water Integrated Monitoring Initiative for SDG 6 (IMI-SDG6), the United Nations seeks to support countries in monitoring water- and sanitation-related issues within the framework of the 2030 Agenda for Sustainable Development, and in compiling country data to report on global progress towards SDG 6.

IMI-SDG6 brings together the United Nations organizations that are formally mandated to compile country data on the SDG 6 global indicators, and builds on ongoing efforts such as the World Health Organization (WHO)/United Nations Children's Fund (UNICEF) Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), the Global Environment Monitoring System for Freshwater (GEMS/Water), the Food and Agriculture Organization of the United Nations (FAO) Global Information System on Water and Agriculture (AQUASTAT) and the UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS).

This joint effort enables synergies to be created across United Nations organizations and methodologies and requests for data to be harmonized, leading to more efficient outreach and a reduced reporting burden. At the national level, IMI-SDG6 also promotes intersectoral collaboration and consolidation of existing capacities and data across organizations.

The overarching goal of IMI-SDG6 is to accelerate the achievement of SDG 6 by increasing the availability of high-quality data for evidence-based policymaking, regulations, planning and investments at all levels. More specifically, IMI-SDG6 aims to support countries to collect, analyse and report SDG 6 data, and to support policymakers and decision makers at all levels to use these data.

- > Learn more about SDG 6 monitoring and reporting and the support available: [www.sdg6monitoring.org](http://www.sdg6monitoring.org)
- > Read the latest SDG 6 progress reports, for the whole goal and by indicator: [https://www.unwater.org/publication\\_categories/sdg6-progress-reports/](https://www.unwater.org/publication_categories/sdg6-progress-reports/)
- > Explore the latest SDG 6 data at the global, regional and national levels: [www.sdg6data.org](http://www.sdg6data.org)



INDICATORS	CUSTODIANS
6.1.1 Proportion of population using safely managed drinking water services	WHO, UNICEF
6.2.1 Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water	WHO, UNICEF
6.3.1 Proportion of domestic and industrial wastewater flows safely treated	WHO, UN-Habitat, UNSD
6.3.2 Proportion of bodies of water with good ambient water quality	UNEP
6.4.1 Change in water-use efficiency over time	FAO
6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	FAO
6.5.1 Degree of integrated water resources management	UNEP
6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation	UNECE, UNESCO
6.6.1 Change in the extent of water-related ecosystems over time	UNEP, Ramsar
6.a.1 Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan	WHO, OECD
6.b.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management	WHO, OECD



# Foreword

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The COVID-19 crisis has caused enormous disruption to sustainable development. However, even before the pandemic, the world was seriously off track to meet Sustainable Development Goal 6 (SDG 6) – to ensure water and sanitation for all by 2030.

No matter how significant the challenges we face, achieving SDG 6 is critical to the overarching aim of the 2030 Agenda, which is to eradicate extreme poverty and create a better and more sustainable world. Making sure that there is water and sanitation for all people, for all purposes, by 2030 will help protect global society against many and varied looming threats.

Our immediate, shared task is to establish safe water and sanitation services in all homes, schools, workplaces and health care facilities. We must increase investment in water use efficiency, wastewater treatment and reuse, while protecting water-related ecosystems. And we must integrate our approaches, with improved governance and coordination across sectors and geographical borders.

In short, we need to do much more, and do it much more quickly. In the SDG 6 Summary Progress Update 2021 that preceded this series of reports, UN-Water showed that the current rate of progress needs to double - and in some cases quadruple - to reach many of the targets under SDG 6.

At the March 2021 high-level meeting on the “Implementation of the Water-related Goals and Targets of the 2030 Agenda”, UN Member States noted that to achieve SDG 6 by 2030 will require mobilizing an additional US\$ 1.7 trillion, three times more than the current level of investment in water-related infrastructure. To make this happen, Member States are calling for new partnerships between governments and a diverse group of stakeholders, including the private sector and philanthropic organizations, as well as the wide dissemination of innovative technology and methods.

We know where we need to go, and data will help light the way. As we ramp up our efforts and target them at areas of greatest need, information and evidence will be of critical importance.

Published by the UN-Water Integrated Monitoring Initiative for SDG 6 (IMI-SDG6), this series of indicator reports is based on the latest available country data, compiled and verified by the custodian United Nations agencies, and sometimes complemented by data from other sources.



The data were collected in 2020, a year in which the pandemic forced country focal points and UN agencies to collaborate in new ways. Together we learned valuable lessons on how to build monitoring capacity and how to involve more people, in more countries, in these activities.

The output of IMI-SDG6 makes an important contribution to improving data and information, one of the five accelerators in the SDG 6 Global Acceleration Framework launched last year.

With these reports, our intention is to provide decision-makers with reliable and up-to-date evidence on where acceleration is most needed, so as to ensure the greatest possible gains. This evidence is also vital to ensure accountability and build public, political and private sector support for investment.

Thank you for reading this document and for joining this critical effort. Everyone has a role to play. When governments, civil society, business, academia and development aid agencies pull together dramatic gains are possible in water and sanitation. To deliver them, it will be essential to scale up this cooperation across countries and regions.

The COVID-19 pandemic reminds us of our shared vulnerability and common destiny. Let us “build back better” by ensuring water and sanitation for all by 2030.



**Gilbert F. Hougbo**

UN-Water Chair and President  
of the International Fund for  
Agricultural Development

A handwritten signature in black ink, appearing to read "G. Hougbo", written over a horizontal line.





# Joint foreword

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The Sustainable Development Goal (SDG) 6, target 5 – with its focus on the implementation of integrated water resources management at all levels – is unique in its aim for transboundary cooperation. With 153 countries sharing transboundary waters, which account for over 60 per cent of the world’s flow of freshwater, the importance of cooperation for their equitable and sustainable management couldn’t be clearer.

Published at three-year intervals since 2018, progress reports on SDG indicator 6.5.2 are an opportunity to take stock of progress, highlight data gaps, and offer suggestions for accelerating progress on transboundary water cooperation.

This second progress report offers encouragement, particularly in the context of the COVID-19 pandemic, that countries are increasingly engaged in the exercise of monitoring transboundary water cooperation through the SDGs. An impressive 129 countries sharing transboundary rivers, lakes and aquifers submitted a national SDG indicator 6.5.2 report for the second monitoring exercise – thirty more countries since the first exercise.

There has also been an overall improvement in the quality of national reports, as countries continue to work with UNECE, UNESCO and partners. It is especially promising that the process of developing national reports on SDG indicator 6.5.2 has led to cooperation, in some instances among stakeholders at the national level or among neighbouring countries. This cooperation has led to important gains, such as countries reaching a better understanding of their transboundary aquifer data gaps and needs. Going forward, both the exercise itself and data contained within national reports constitute important drivers of transboundary water cooperation at the global level.

As it becomes more and more apparent that cooperation over water offers multiple benefits extending far beyond this liquid resource, progress must be accelerated. Indeed, water plays a key role in poverty alleviation, food security, health and well-being, clean energy, climate action, ecosystem protection, as well as peace and security (SDGs 1-3, 7, and 13-16, respectively).

Yet, of the 101 countries where the indicator value is currently available, only 24 of them have reported that operational arrangements cover all their transboundary basin area. In line with the UN Decade for Action and SDG 6 Global Acceleration Framework, this second progress report identifies a number

of ways to accelerate progress on transboundary water cooperation, including upscaling capacity development, building upon the two global water conventions, tackling traditional financing bottlenecks, capitalising on the 2023 UN Water Conference to increase the political support for transboundary water cooperation, and better leveraging the expertise of UN agencies and other international organisations.

UNECE and UNESCO stand ready to support countries in accelerating these efforts.



**Olga Algayerova**

Executive Secretary,  
United Nations Economic  
Commission for Europe

A handwritten signature in blue ink that reads "Algayerova".



**Audrey Azoulay**

Director General,  
United Nations Educational,  
Cultural and Scientific  
Organization

A handwritten signature in black ink that reads "Audrey Azoulay" with a horizontal line underneath.

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# Executive summary

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Transboundary waters account for 60 per cent of the world's freshwater flows and 153 countries have territory within at least one of the 286 transboundary river and lake basins and 592 transboundary aquifer systems. Cooperation over these waters offers multiple benefits and contributes not only to Sustainable Development Goal (SDG) 6 (water and sanitation for all), but many other SDGs, including those related to poverty alleviation (SDG 1), food security (SDG 2), health and well-being (SDG 3), clean energy (SDG 7), climate change (SDG 13), ecosystem protection (SDG 14 and 15), as well as peace and security (SDG 16). The COVID-19 crisis has provided an important reminder of the links between transboundary water cooperation and health, while also offering an opportunity to ensure that the post-COVID-19 recovery capitalizes upon the catalytic role that such cooperation can play in advancing the SDGs. In addition, increasing climate change impacts on transboundary basins call for joint action, which can make adaptation more effective.

SDG target 6.5 calls for the implementation of integrated water resources management at all levels, including through transboundary cooperation as appropriate, by 2030. Advancing transboundary water cooperation through the accelerated adoption of operational arrangements between countries can contribute significantly to the United Nations Decade

of Action and the SDG 6 Global Acceleration Framework. However, this will require a major effort. The first SDG indicator 6.5.2 report in 2018 considered this need for accelerated action and highlighted some of the means by which to achieve it. This second SDG indicator 6.5.2 report provides an opportunity i) to re-iterate this need, based on improvements both in the quality and coverage of data, and ii) to refine the call for accelerated action, especially in light of the SDG 6 Global Acceleration Framework.

**Despite COVID-19, countries have responded extremely positively to the second monitoring exercise, with 129 out of 153 countries sharing transboundary waters submitting reports to the 2020 exercise, compared with 107 in 2017.**

Country engagement in regional workshops (both face-to-face and online) organized by the custodian agencies (United Nations Economic Commission for Europe (UNECE) and United Nations Educational, Scientific and Cultural Organization (UNESCO)) and partners between 2018 and 2020, as well as supporting guidance material, strengthened the monitoring exercise.



This high level of investment in the monitoring exercise is an important outcome in itself, which in turn has enhanced countries' reporting capacity and helped address data gaps. Particularly in relation to transboundary aquifer data, the SDG indicator 6.5.2 monitoring exercise has assisted countries to begin to assess data gaps, and the actions required to address them. Countries have also reported positive experiences of how the SDG indicator 6.5.2 monitoring exercise has triggered both in-country and intercountry dialogues on transboundary water cooperation. While these developments are encouraging, significant data gaps still remain, particularly in relation to transboundary aquifers. Also, a side effect of improvements in the quality of reporting is that the SDG 6.5.2 indicator value for a particular country may have changed between the first and the second monitoring exercise not because of progress "on the ground", but rather due to more accurate data.

By combining data from 2017 and 2020, it is possible to calculate the indicator for 101 of the 153 countries that share transboundary rivers, lakes and aquifers. These data show that the global average of the indicator value (percentage of transboundary basin area in a country covered by an operational arrangement) is 58 per cent. Thirty-two countries now report having 90 per cent or more of their transboundary basin area covered by operational arrangements (compared with 22 in 2017).

**Only 24 of those countries report having met the target of having all of their transboundary basins covered (compared with 17 in 2017).**

In relation to river and lake basins, Europe and North America show the fullest coverage of operational arrangements, with 27 out of 42 countries reporting that operational arrangements cover 90 per cent or more of their transboundary river and lake basin area. This is followed by sub-Saharan Africa, where 18 of 42 countries reported that 90 per cent or more of their transboundary river and lake basin area is covered by operational arrangements. For Central, Eastern, Southern and South-Eastern Asia combined, only six countries out of 15 have 90 per cent or more of their basin area covered by operational arrangements, followed by Latin America and the Caribbean where only four out of 22 countries have 90 per cent or more of their basin area covered by operational arrangements. Finally, in the North Africa and Western Asia region, only one out of 17 countries reported having 90 per cent or more of its basin area covered by operational arrangements.

The situation in Europe and North America is also the most advanced for transboundary aquifers, with 24 out of 36 countries sharing transboundary aquifers reporting that operational arrangements cover 70 per cent or more of their transboundary aquifer area. However, for most countries in Central, Eastern, Southern and South-Eastern Asia, Latin America and the Caribbean, and Northern Africa and Western Asia, despite the importance of groundwater within the arid and semi-arid climates found in large parts of these regions, operational arrangements cover only 30 per cent or less of their transboundary aquifer area. Sub-Saharan Africa presents a more intermediate situation, although the majority of countries still report that operational arrangements for transboundary aquifers are lacking, or they have reported difficulties in obtaining the requisite aquifer data.

In addition to producing the SDG indicator value data, the second SDG indicator 6.5.2 monitoring exercise has offered an important opportunity for countries to report on a lot of activities undertaken to advance transboundary water cooperation, and to show innovative ways in which they have been able to accelerate cooperation. In this regard, the SDG indicator 6.5.2 monitoring exercise has revealed progress both in terms of the adoption of around 20 arrangements between 2017 and 2020, and the reinvigoration of other arrangements to make them operational.

Cooperation between Kazakhstan and Uzbekistan on the Syr Darya, between Mozambique and Zimbabwe on the Buzi River Basin, and between Botswana, Namibia and South Africa on the Stampriet Transboundary Aquifer highlights that sometimes countries can take relatively straightforward steps to trigger cooperation and accelerate progress towards ensuring that operational arrangements cover all their transboundary basins. Key components in support of these steps include financing, capacity development, political will, and data collection and exchange. The United Nations and its partners have an important role to play in supporting this accelerated progress through the leveraging, mobilization and coordination of expertise related to transboundary water cooperation.







Mekong river, Vietnam, © Shawn Harquail / Flickr - Creative Commons

# Key messages

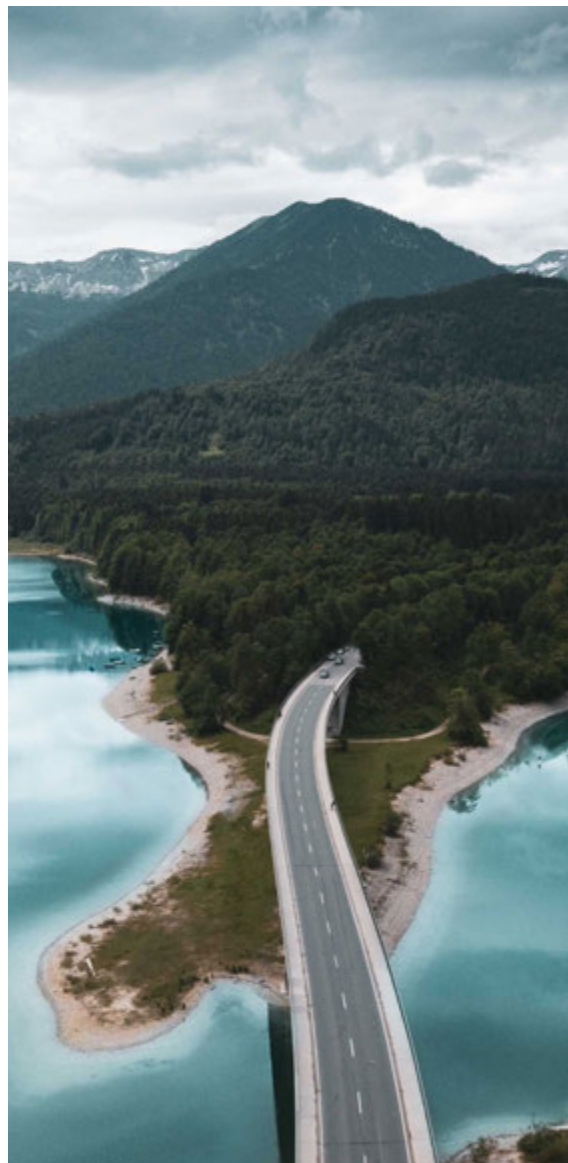
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- **Transboundary waters account for 60 per cent of the world's freshwater flows and 153 countries have territory within at least one of the 286 transboundary river and lake basins and 592 transboundary aquifer systems.** Cooperation over these waters offers multiple benefits and is an important contributor to many SDGs.
- **129 out of 153 countries sharing transboundary basins (rivers, lakes and aquifers) submitted reports, compared with 107 in 2017.** Despite the COVID-19 pandemic, this shows that countries have responded extremely positively to the second monitoring exercise, which is in itself a positive sign of country commitment to transboundary water cooperation at the global level. Greater engagement has improved data quality.
- **However, only 32 countries have 90 per cent or more of their transboundary basin area covered by operational arrangements, of which only 24 countries have all of their basin area covered.<sup>1</sup>** Ensuring that operational arrangements cover all transboundary basins by 2030 will therefore require a significant acceleration in effort.
- In line with the United Nations Decade of Action (United Nations General Assembly, 2019) and the SDG 6 Global Acceleration Framework (UN-Water, 2020a), **efforts should focus on a number of key acceleration areas**, including:
  - > **addressing data gaps**, especially in relation to the coverage and dynamics of transboundary aquifers, as a trigger for sustained cooperation
  - > **upscaling capacity development** as a critical precursor to the negotiation and implementation of operational arrangements for transboundary water cooperation
  - > **capitalizing on the global water conventions and draft articles on the law of transboundary aquifers** as a basis upon which to develop new arrangements or revise existing ones at the basin or subbasin level
  - > **mobilizing political will** for transboundary water cooperation by coupling it with other critical issues related to sustainability, climate change, poverty alleviation and peace

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<sup>1</sup> Based on 101 of the 153 countries sharing transboundary rivers, lakes and aquifers having on average 58 per cent of their basin area covered by operational arrangements (figure based on combined data from 2017 and 2020).

- > **coordinating efforts to advance transboundary water cooperation (SDG indicator 6.5.2) with efforts to accelerate progress on integrated water resources management (IWRM) at the national level (SDG indicator 6.5.1), by recognizing their mutually supportive role**
  
- > **recognizing the tangible benefits that both the negotiation and implementation of operational arrangements generate for sustainable development, climate change, poverty alleviation and peace, to help address traditional bottlenecks in financing transboundary water cooperation**
  
- > **upscaling and mobilizing the expertise of United Nations organizations and partners**, such as through capacity-building, facilitation and policy framing, to support countries in the negotiation, adoption and implementation of arrangements for transboundary water cooperation.



Isar River in Lenggries, Germany, a tributary to the Danube River, © Paul Gilmore / Unsplash - Creative Commons

# ● 1. Introduction and background

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## 1.1. Why is transboundary water cooperation important?

Cooperation over rivers, lakes and aquifers shared between countries is important for multiple reasons, one of which relates to their physical significance. Transboundary waters account for 60 per cent of the world's freshwater flows and 153 countries have territory within at least one of the 286 transboundary river and lake basins and 592 transboundary aquifer systems (see Figure 1). Therefore, ensuring water availability and the sustainable management of water and sanitation for all (SDG 6) while maintaining healthy ecosystems requires countries to consider how they manage both the quantity and quality of waters that originate from, or flow to, the territory of another country.

Transboundary water cooperation also plays a crucial role in addressing climate change impacts, which place significant pressure on the world's transboundary waters. Cooperative arrangements in transboundary basins allow for more effective adaptation to changing conditions, e.g. through data-sharing and enlarging the planning space, which in turn can help promote political stability and sustainable development at the regional level. Conversely, a lack of cooperation runs the risk of unilateral adaptation measures affecting water resources and adaptation options within countries sharing a particular river, lake, or aquifer.

### Box 1. Key terms used

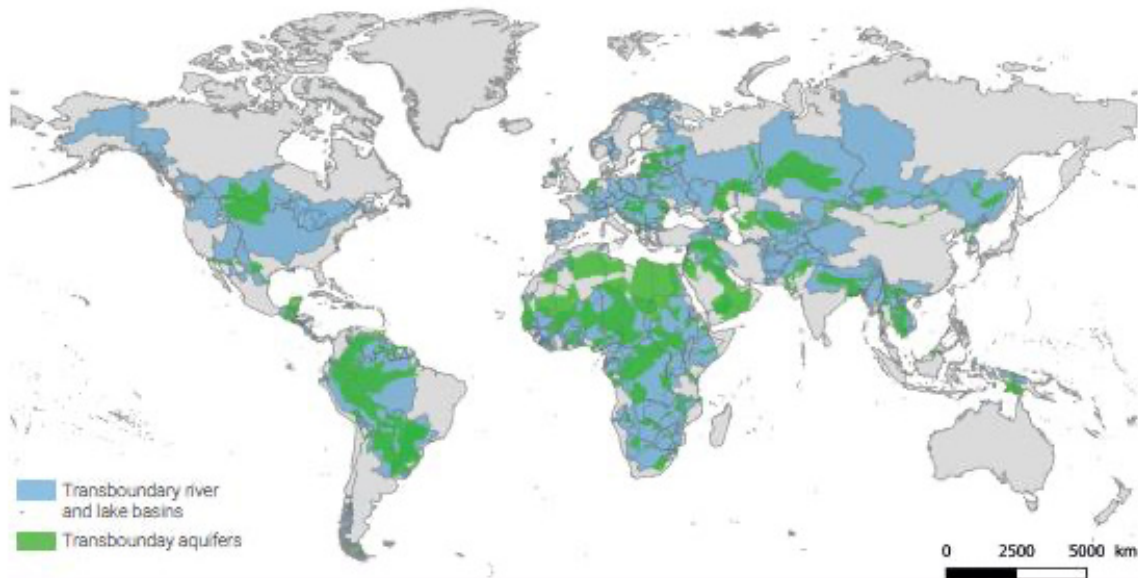
**Transboundary river and/or lake basin** – a geographical area extending over two or more countries determined by the watershed limits of the system of waters flowing into a common terminus (International Law Association, 1966).

**Transboundary aquifer** – a permeable water-bearing geological formation underlain by a less permeable layer and the water contained in the saturated zone of the formation, parts of which are situated in different countries (International Law Commission, 2008).

**Transboundary water cooperation** – any interactions between countries concerning the use and protection of shared rivers, lakes and aquifers.



**Figure 1. Transboundary river and lake basins, transboundary aquifers and international borders**



There is also a risk that, in the absence of cooperation, unilateral measures adopted by countries to tackle the COVID-19 crisis – and the subsequent recovery – may increase pressures, tensions and disputes over transboundary waters. This is why the international community has increasingly called upon countries to adopt arrangements for transboundary water cooperation,<sup>2</sup> and why the Inter-Agency and Expert Group on Sustainable Development Goal (SDG) Indicators (IAEG-SDGs) incorporated an indicator that monitors progress on the coverage of operational arrangements for transboundary waters into the SDG indicator framework.

Countries have an opportunity to introduce post-COVID-19 recovery packages that recognize the value of investing in transboundary water cooperation as a means to “build back better”<sup>3</sup> and that drive regional sustainable development, enhance resilience to climate change, tackle ecosystem degradation and biodiversity loss, and promote peace and security. Past experience clearly demonstrates how operational arrangements for transboundary water cooperation that focus on nature-based solutions can deliver many benefits and curb several global challenges (see Figure 2 for indicative examples).

2 For instance, the High-Level Panel on Water and Peace, the High-level Panel on Water, and Resolution 17 of the International Union for Conservation of Nature (IUCN) World Water Congress 2020 all call for States to join the two global water conventions (1997 Convention on the Law of the Non-navigational Uses of International Watercourses (1997 Watercourses Convention) and the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1992 Water Convention), and urge countries to adopt legal and institutional frameworks for their transboundary waters (see <https://www.unwater.org/report-global-high-level-panel-water-peace/>; <https://www.unwater.org/high-level-panel-on-water-outcome-document/> and <https://www.iucncongress2020.org/motion/017>). See also UN-Water (2021). The United Nations Global Water Conventions: fostering sustainable development and peace. United Nations. Available at <https://www.unwater.org/publications/the-united-nations-global-water-conventions-fostering-sustainable-development-and-peace/>.

3 In his message on International Mother Earth Day, the United Nations Secretary-General stressed that “the current crisis is an unprecedented wake-up call. We need to turn the recovery into a real opportunity to do things right for the future” (UN News, 2020).



**Figure 2. The benefits of having operational arrangements in place for transboundary water cooperation<sup>4</sup>**

Global challenge	SDG	Example of operational arrangements for transboundary water cooperation contributing to SDGs
Poverty alleviation	1	Cooperation between Angola, Botswana and Namibia through the Permanent Okavango Basin River Commission's livelihood and socioeconomic development thematic programme demonstrates how basin-wide strategic development programmes can address underlying drivers of poverty (Permanent Okavango Basin River Water Commission, 2019). In 2019, an estimated basin population of 845,000 was living in poverty (World Bank, 2019).
Food security	2	Cooperation between Algeria, Libya and Tunisia relating to the North-Western Sahara Aquifer System (NWSAS) has improved agricultural planning and practices, leading to increased income for farmers, better planning of development projects and reduced groundwater exploitation (North-Western Sahara Aquifer System Consultation Mechanism, 2020). Further improvements in irrigation systems could result in 47 per cent water abstraction savings in the NWSAS area (North-Western Sahara Aquifer System Consultation Mechanism, 2020).
Health and well-being	3	Through the 2012 Great Lakes Water Quality Agreement, Canada and the US work together to reduce "chemicals of mutual concern" that threaten human health and the environment, including developing bilateral strategies and coordinating domestic water quality standards, objectives, criteria and guidelines (Government of Canada, 2012).
Clean energy	7	The arrangement between Brazil and Paraguay concerning the Itaipu binational power plant, which delivers 15 per cent of Brazil's electricity consumption and 86 per cent of Paraguay's, demonstrates how countries can cooperate to deliver both affordable and clean energy, and water and sanitation for all (Itaipu Binacional, n.d.).
Climate change	13	Through the Mekong River Commission, countries of the Lower Mekong have adopted numerous strategies, plans and studies to address climate change, including the Mekong Climate Change Adaptation Strategy and Action Plan (Mekong River Commission, 2018).
Ecosystem protection (marine)	14	Cooperation between the countries sharing the Dinaric Karst Aquifer System (Albania, Bosnia and Herzegovina, Croatia, Montenegro) allowed better national and regional management approaches to this unique freshwater resource to be developed to address related ecosystems protection and improve water quality (UNESCO IHP, 2016a; DIKTAS, n.d.) Conservation of groundwater flow discharge to the sea maintains valuable ecosystems at the junction of land and marine environments.
Ecosystem protection (land)	15	Cooperation between communities in Honduras and El Salvador on the Goascorán River Basin through the introduction of nature-based solutions (such as forest restoration, spring restoration, reduction of illegal logging, and economic diversification of agroforestry systems) has enhanced water security at the community level (Iza, n.d.).
Peace and security	16	The 2002 Framework Agreement on the Sava River Basin, the first post-war multilateral framework adopted by countries of the former Yugoslavia, shows how regional cooperation over water can both drive and consolidate peacebuilding efforts (The Economist Intelligence Unit, n.d.).

<sup>4</sup> See generally United Nations Economic Commission for Europe [UNECE] (2015).

Experience also shows that implementing IWRM at all levels, as called for in SDG target 6.5, can be mutually supportive.<sup>5</sup> Effective cooperation over transboundary waters is impossible without working laws, policies and institutions at the national level. Progress on IWRM at the national level is therefore critical to advancing progress in the adoption of operational arrangements for cooperation on transboundary waters, while the negotiation, adoption and implementation of arrangements at the transboundary level may in turn help strengthen IWRM at the national level (United Nations Environment Programme [UNEP], 2021).<sup>6</sup>

## 1.2. Accelerating action to achieve SDGs by 2030

While global momentum in support of the SDGs is growing, action to meet the goals is not yet advancing at the speed and scale required to achieve the goals and targets by 2030. The Decade of Action therefore calls for actions to be accelerated at three levels:

- globally through greater leadership, more resources and smarter solutions
- locally to transition policies, budgets, institutions and regulatory frameworks and
- at a people level, including youth, civil society, the media, the private sector, unions, academia and other stakeholders, to generate the force to push through the requisite transformations (United Nations General Assembly, 2019; United Nations Secretary-General, 2019).

In 2020, UN-Water launched the SDG 6 Global Acceleration Framework in response to the Decade of Action. This framework aims to “deliver fast results at an increased scale”, based on financing, data and information, capacity development, innovation and governance (UN-Water, 2020a). As discussed in chapter 5 of this report, transboundary water cooperation can play an important role in triggering the much-needed acceleration of SDG 6, but it also needs to be accelerated in itself. In this context, SDG indicator 6.5.2 is an important measure of the level of effort needed to ensure that operational arrangements are in place for all transboundary rivers, lakes and aquifers, and that the benefits of that cooperation support progress across SDGs. Conversely, a failure of countries to adopt operational arrangements for transboundary water cooperation will constitute a serious barrier to not only achieving SDG 6, but also achieving many other SDG targets.

## 1.3. Aims and objectives of the report

The first SDG indicator 6.5.2 progress report in 2018 provided an overview of the initial monitoring exercise, and established a global baseline for assessing the extent to which transboundary basins are covered by operational arrangements (United Nations Economic Commission for Europe [UNECE] and United Nations Educational, Scientific and Cultural Organization [UNESCO], 2018). The report noted that progress in the adoption of operational arrangements must accelerate dramatically in order to cover all transboundary basins by 2030. The report concluded that capitalizing on

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<sup>5</sup> SDG target 6.5 calls for the implementation of IWRM at all levels, including through transboundary cooperation as appropriate, by 2030. IWRM is defined as “a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems” (Global Water Partnership, 2000).

<sup>6</sup> SDG indicator 6.5.2 complements SDG indicator 6.5.1, which monitors the degree of IWRM implementation at all levels, including transboundary, by assessing four key components: enabling environment, institutions and participation, management instruments, and financing.

the SDG monitoring process, investing in data exchange, building on the momentum of the two global water conventions and the draft articles on the law of transboundary aquifers, coupling efforts with other critical issues including sustainability, climate change, poverty alleviation and peace and security, and increasing financing for transboundary water cooperation, offered the means by which to accelerate progress.

This second SDG indicator 6.5.2 report seeks to build upon both the findings and recommendations set out in the first report. It presents the advances made since the initial exercise, including the increased number of countries that engaged in the exercise and improvements in the quality of data submitted. The report also provides a synthesis analysis of country data at both the global and regional levels across both 2017 and 2020 monitoring exercises. Finally, this second report reflects upon the recommendations made in the first report, and considers the further actions needed to accelerate progress on transboundary water cooperation, particularly in light of the SDG 6 Global Acceleration Framework and the United Nations Decade of Action.

The next chapter reviews the monitoring process and the role of the custodian agencies. It shows that data on aquifers often remain a major obstacle for reporting countries. Chapter 3 then analyses national indicator values in order to assess progress at both the global and regional levels in the coverage of operational arrangements for transboundary water cooperation. The penultimate chapter reflects on the analysis of the findings of the second monitoring exercise and, in line with the SDG 6 Global Acceleration Framework, considers the actions required to accelerate progress in the adoption of operational arrangements for transboundary water cooperation.

The final chapter concludes by highlighting the need for a significant step-change in the number of transboundary basins covered by operational arrangements, and identifies several key steps that can accelerate progress.



Puerto Guadal on the Buenos Aires/General Carrera Lake shared by Chile and Argentina, © Omer Dvori / Unsplash - Creative Commons

**Box 2. SDG indicator 6.5.2 monitors the “proportion of transboundary basin area [within a country] with an operational arrangement for water cooperation.”**

“Basin area” includes both “river and lake basins” and “aquifers”. For an “arrangement for water cooperation” to be operational, all four of the following criteria must be met:

- There is a joint body or mechanism for transboundary cooperation in place.
- There are at least annual meetings between riparian countries.
- A joint or coordinated water management plan or joint objectives have been established.
- At least annual exchanges of data and information take place.

An “arrangement for water cooperation” includes “a bilateral or multilateral treaty, convention, agreement or other arrangement, such as memorandum of understanding, between riparian States that provides a framework for cooperation on transboundary water management. Agreements or other kind of formal arrangements may be interstate, intergovernmental, inter-ministerial, interagency or between regional authorities.”

Collectively, these criteria are the foundations upon which, in accordance with SDG target 6.5, more advanced activities in support of IWRM can take place at the transboundary level through an operational arrangement or a set of complementary operational arrangements.

*Sources: UN-Water, 2020a and UNECE, 2020a.*



The Aral Sea from Space © ESAA.Gerst, CC BY-SA 3.0 IGO

## ● 2. The 2020 monitoring exercise and the role of custodian agencies

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### 2.1. Context

The 2017 SDG indicator 6.5.2 monitoring exercise was the first time that countries reported directly on transboundary water cooperation at the global level. While the response rate from countries was good, some were unable to clarify all the points required to calculate their final indicator value. The second exercise – which covered the official monitoring period of the first half of 2020 and had a reporting deadline of 30 June 2020 – improved the geographical coverage of the reporting, especially for Asia, and offered countries the possibility to clarify information from their first report or to provide additional detail.

Even for countries that had provided an indicator value in 2017–2018, the second round gave them the opportunity to include data not initially taken into account or only provisionally submitted to the first exercise, to revise their submission where appropriate, and to provide additional detail where appropriate. In the majority of cases, these improvements explain any change in a country's indicator value, rather than those changes being due to an improvement or deterioration in the coverage of operational arrangements. The second exercise therefore offers an

opportunity to consolidate and improve the baseline, although occasionally the national reports do highlight new developments.<sup>7</sup>

In many instances, the second monitoring exercise also led to improvements in sections II and III of previously submitted national reports.<sup>8</sup> This is also the role of co-custodian agencies, i.e. to assist countries in preparing better quality reports that are more substantiated and better reflect the status and coverage of operational arrangements.

### 2.2. Custodian agency support to countries

The custodian agencies actively supported countries to report for the first time, or to improve the quality of their previous submission. Support, provided in collaboration with countries and partners, included disseminating the results of the first monitoring exercise, reflecting on the lessons learned, and implementing a range of capacity development activities. For instance, between the two monitoring exercises and following partner requests, regional workshops were organized by the custodian agencies and partners for South America (November 2018),<sup>9</sup> Central Africa (July 2018, November 2019),<sup>10</sup> Central America and the Caribbean (November 2019),<sup>11</sup> Europe,

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<sup>7</sup> See section 4.2.1 for recent developments.

<sup>8</sup> Section II of the reporting template allows countries to provide detailed information on the basins they share, the arrangements that relate to them, and implementation progress. Section III relates to national laws and policies that are relevant to transboundary waters (see <https://www.sdg6monitoring.org/indicator-652/>).

<sup>9</sup> Co-organized with Global Water Partnership – South America and the Regional Center for Groundwater Management (CeReGAS).

<sup>10</sup> Co-organized with Global Water Partnership – Central Africa and the Economic Community of Central African States.

<sup>11</sup> Co-organized with Global Water Partnership – Central America, Regional Groundwater Centre for Latin America and the Caribbean, and the Conference of Ibero-American Water Directors (CODIA).



Caucasus and Central Asia (October 2019), the Middle East and North Africa (March 2020),<sup>12</sup> and Asia (September 2020).<sup>13</sup> In addition, five global webinars took place in 2020 (in English, French, Russian and Spanish). The co-custodian agencies also refined the reporting template based on country feedback, strengthened their guidance materials on SDG indicator 6.5.2 by revising the step-by-step methodology, and developed, together with a drafting group

composed of countries, a guide to completing the reporting template (UN-Water, 2020b; United Nations Economic Commission for Europe [UNECE], 2020a). The practice of countries providing a preliminary report before final submission also reaffirmed the important role of exchange and dialogue between the countries and the custodian agencies.

### Box 3. Some of the benefits and limitations of SDG indicator 6.5.2

While SDG indicator 6.5.2 builds upon and complements previous initiatives assessing the level and status of transboundary cooperation, such as the Oregon State University's International Freshwater Treaties Database or the Transboundary Waters Assessment Programme, it is unique in that countries themselves directly provide data. This can potentially lead to further improvements of the global databases and better understanding of transboundary water cooperation worldwide.

SDG indicator 6.5.2 is situated within the SDG framework, which allows for greater opportunities to analyse and take account of transboundary water cooperation within other aspects of sustainable development. Countries report on both the existence of an arrangement and operationality criteria (see text Box 2). It is therefore possible to assess which particular aspects of operationality might be lacking, and to develop clear action-oriented pathways to improve operationality, which in some instances may reinvigorate "dormant" arrangements.

SDG indicator 6.5.2 does not measure all cooperative activities, such as exchanges between countries that lead to operational arrangements, or cooperative activities conducted by countries on transboundary waters at a regional or global scale. Countries can document such activities in their SDG indicator 6.5.2 national reports, which therefore provide a wealth of information on the current progress on transboundary water cooperation globally.

SDG indicator 6.5.2 does not measure outcomes of cooperation, such as improvements in the quality of water in transboundary basins. However, SDG indicator 6.5.2 can be combined with other outcome-focused SDG indicators, such as SDG indicator 6.3.2 on water quality or SDG indicator 6.6.1 concerning changes to water-related ecosystems. Countries can also highlight the outcomes of their cooperation within their SDG indicator 6.5.2 national reports.

An analysis of the degree of IWRM implementation, as assessed in SDG indicator 6.5.1, and the coverage of operational arrangements, as assessed in 6.5.2, offers a fuller picture of the correlation between national and transboundary level IWRM progress.

Regular reporting of the indicator every three years helps maintain the topic of transboundary cooperation on the national, transboundary and global agenda. Countries can regularly update and provide more in-depth data.

Countries are encouraged to consult with the other riparian countries when developing their national reports. As shown in 2018–2021, this can offer an opportunity to identify gaps in cooperation and jointly address them.

<sup>12</sup> Co-organized with the United Nations Economic and Social Commission for Western Asia (ESCWA).

<sup>13</sup> Co-organized with United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), and Global Water Partnership.

### 2.3. Overview of country responses to the 2020 monitoring exercise

Figure 3 provides an overview of the reporting status for the second monitoring exercise, and a comparison with the first exercise. For the second exercise, 129 countries submitted a response compared with the 107 countries in the first exercise. This progress is very encouraging, especially in the context of the COVID-19 pandemic. As reported by several countries, the impact of COVID-19 did however delay the submission of reports, or resulted in more limited national and, especially, international coordination in the preparation of the reports.

A significant amount of new data is available for 2020. In terms of final results, 101 countries now have a full value for the indicator (both river and lake basins and transboundary aquifers), compared with 67 countries in 2017. In many cases, the absence of an indicator value is due to aquifer data not being available, although there has been notable progress. In 2020, 94 countries could present an indicator value for transboundary aquifers, compared with only 65 in 2017.

Where the aquifer component is absent, the river and lake basin component is mostly available. The river and lake basin component is now available for 115 countries, compared with only 89 in 2017. While this constitutes a significant

increase, it represents a shortfall of 32 countries out of 147 countries sharing transboundary river and lake basins. 15 of these 32 countries submitted reports but those reports require further clarifications from the countries to calculate the river and lake basin component of the indicator.

Only 18 countries out of the 153 that share transboundary rivers, lakes and aquifers did not submit a response to either monitoring exercise. Also, 14 countries that submitted data in 2017 did not provide updated 2020 data. In these few instances, 2017 data were relied upon for the analysis in chapter 3 of this report.<sup>14</sup> By combining data from 2017 and 2020, SDG indicator 6.5.2 is available for 101 of the 153 countries sharing transboundary rivers, lakes and aquifers, which is a major increase from the 67 countries with an indicator value in 2017–2018.

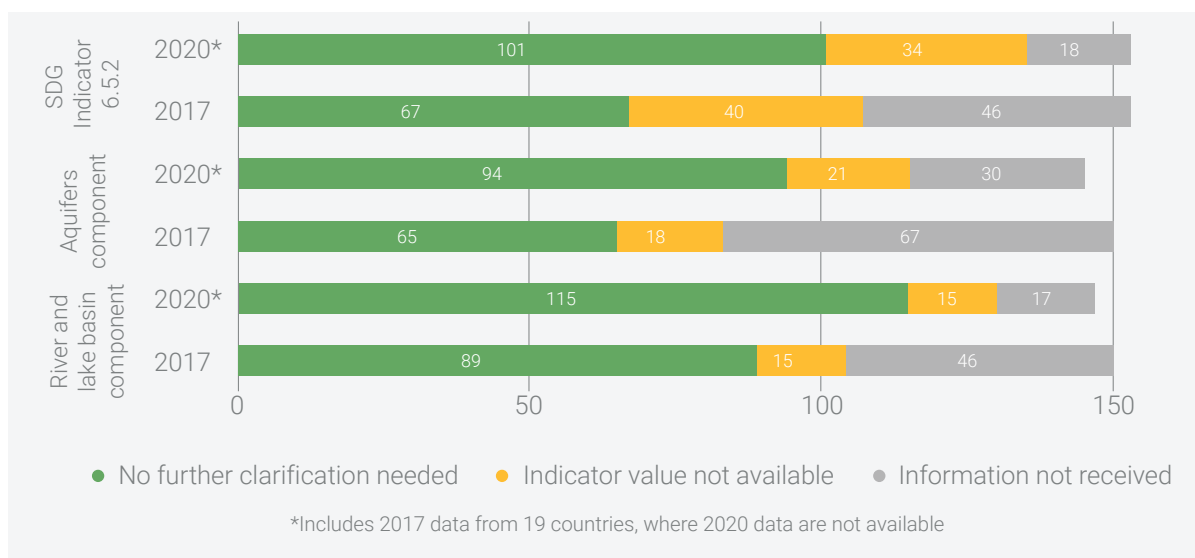
In general, countries have given better consideration to global databases and beneficial exchanges have taken place between countries and custodian agencies during the process of report verification. Flexibility in the application of the methodology concerning estimates of the surface areas of aquifers assisted in this regard (see Box 5). These different factors explain the increase in the number of reports, which in turn resulted in more overall SDG indicator 6.5.2 values.

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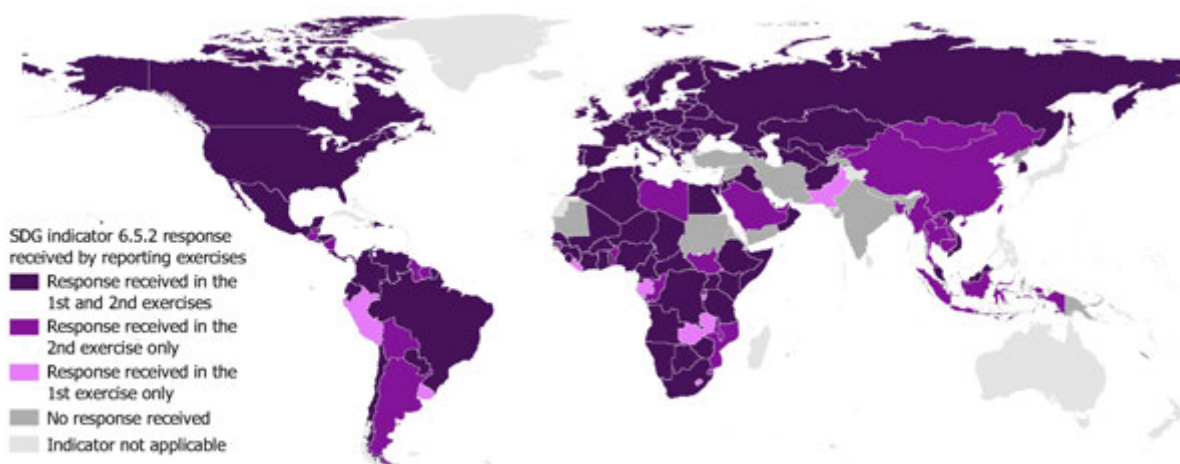
<sup>14</sup> This relates to 19 countries that submitted in only 2017.



**Figure 3. Overview of the number of responses received (comparison between 2017 and 2020 data)<sup>15</sup>**



**Figure 4. Overview of the responses received in the first (2017) and the second (2020) monitoring exercise**



<sup>15</sup> Total numbers for the SDG indicator 6.5.2 for transboundary river and lake basins, and transboundary aquifers, differ because not all countries sharing transboundary river and lake basins also share transboundary aquifers, and vice versa. Based on 2020 data, 153 countries share river and lake basins, and/or aquifers, whereas only 145 countries share aquifers, and only 147 share river and lake basins. This means that there are four instances where countries share only transboundary aquifers, and eight instances where countries share only transboundary river and lake basins.

Despite custodian agencies' efforts to clarify the content of the report, the reports are ultimately a country's view and some information may therefore not align with global databases. Similarly, a particular challenge faced by countries in advancing SDG indicator 6.5.2 progress is that any progress is contingent on there being cooperation with neighbouring countries. Where political willingness within a neighbouring country is lacking, a country will not have the ability by itself to progress. However, as noted in chapter 4, relatively simple steps – such as data exchange or establishing technical meetings – may constitute a useful precursor to the development of operational arrangements. Furthermore, the reporting template allows countries to highlight their national efforts to strengthen transboundary water cooperation.





Lake Titicaca shared by Bolivia and Peru, © Sandro Ayalo / Unsplash - Creative Commons

# ● 3. Assessing progress in transboundary water cooperation at the global and regional levels

## 3.1. Global progress in transboundary water cooperation

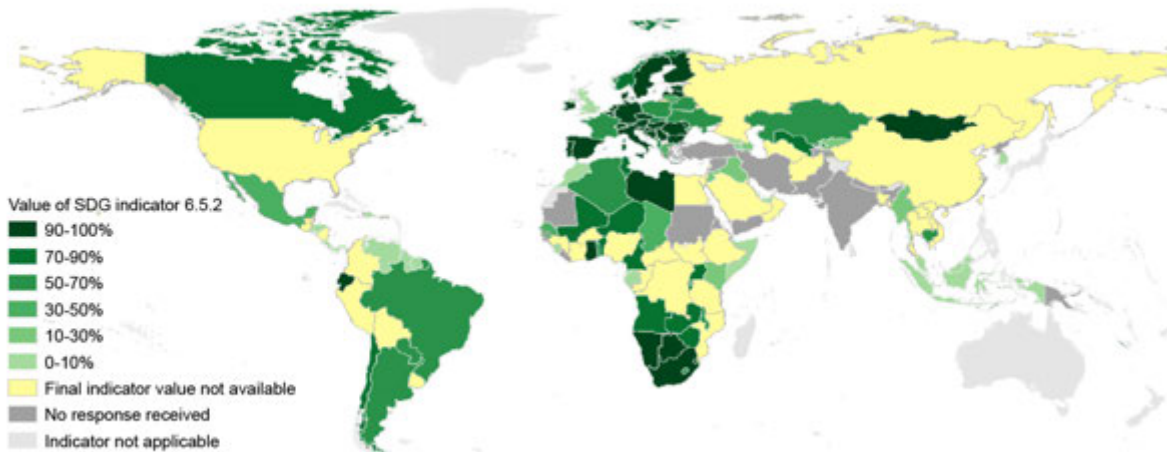
### 3.1.1. Overview of SDG 6.5.2 indicator value

As noted in the introduction, 153 countries share 286 transboundary river and lake basins and 592 transboundary aquifer systems. There is great diversity across these transboundary waters and the countries that share them. For instance, 52 countries have more than

90 per cent of their territory within a river basin, whereas eight countries have less than 10 per cent of their territory within a transboundary river basin (McCracken and Wolf, 2019). The number of countries sharing a basin may also differ greatly. For example, the Danube River Basin has 19 basin countries, whereas 229 basins worldwide are shared by only two countries.<sup>16</sup>

As noted in chapter 2, SDG indicator 6.5.2 is now available for 101 of the 153 countries sharing transboundary rivers, lakes and aquifers.<sup>17</sup>

**Figure 5. Global map of SDG 6.5.2 indicator value per country**

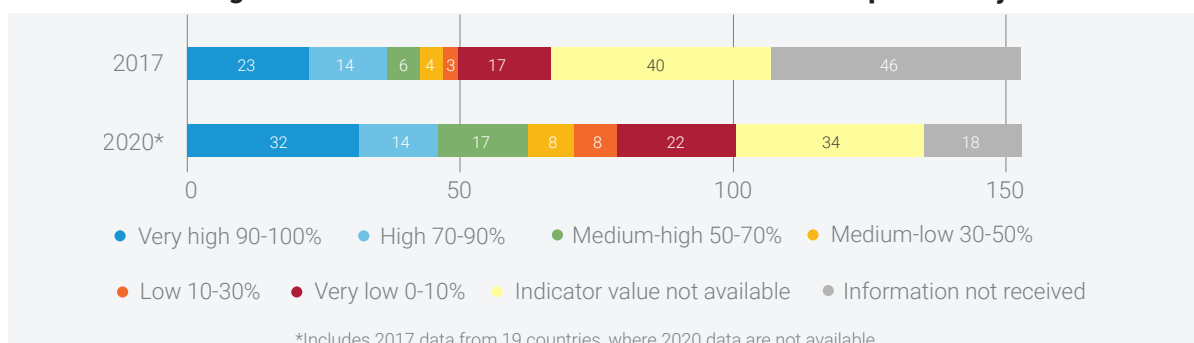


<sup>16</sup> See section 4.2.1.

<sup>17</sup> This includes data from 19 countries that submitted data for only 2017.



**Figure 6. Global overview of SDG 6.5.2 indicator value per country**



These data show that the global average of the indicator value in 2017 and 2020 is almost the same, i.e. 58 per cent in 2020 compared with 59 per cent in 2017.<sup>18</sup> Thirty-two countries now report that operational arrangements cover 90 per cent or more of their transboundary basin area, representing an increase of nine countries since 2017.<sup>19</sup> Of these 32 countries, 24 report that operational arrangements cover all their transboundary basins.

### 3.1.2. SDG indicator 6.5.2 for transboundary river and lake basins

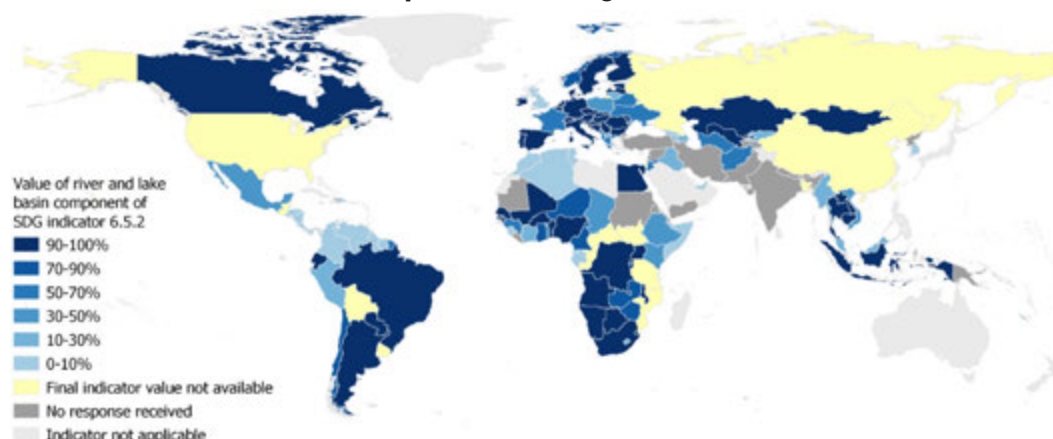
As noted in chapter 2, the river and lake basin component of the indicator is available for 115 of the 147 countries sharing river and lake basins. The average value for SDG indicator 6.5.2 in

relation to river and lake basins is 65 per cent (compared with 64 per cent in 2017). In terms of changes between 2017 and 2020, the increase in the number of countries reporting has led to increases across all levels of the indicator value. For instance, in 2017 only 43 countries reported that operational arrangements covered 90 per cent or more of their transboundary river and lake basin area, compared with 56 countries based on 2017–2020 combined data. However, there has also been an increase in the number of countries reporting low levels of coverage. In 2017, 27 countries reported that operational arrangements covered 30 per cent or less of their transboundary river and lake basin area, compared with 33 countries reporting so for 2017–2020 combined data.

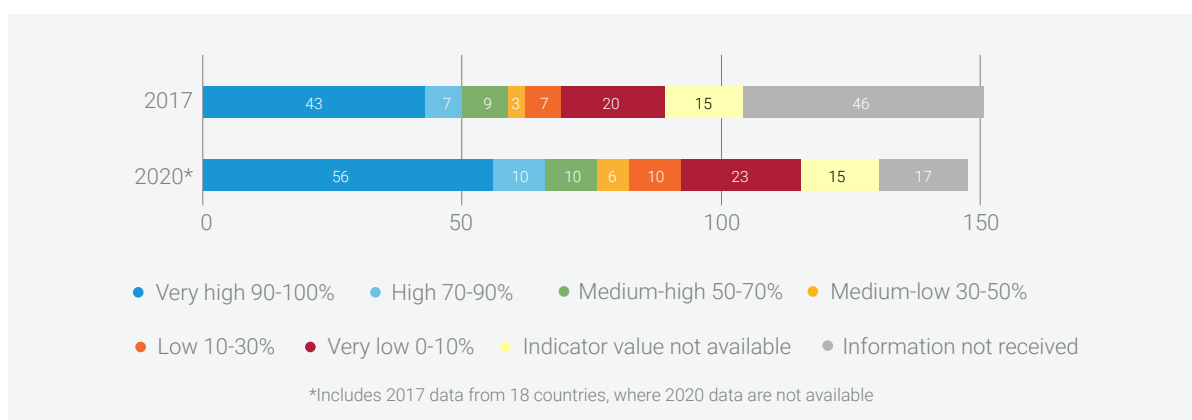
<sup>18</sup> As noted in chapter 2, improvements in data quality and the increase in number of responses primarily explain the slight downward trend in the overall indicator value.

<sup>19</sup> These additional nine countries reflect five countries that had no final indicator value in 2017, five countries that did not report, and one country (Sweden) that improved its indicator score, minus two countries (Serbia and Slovakia) where the indicator value decreased from 2017 to 2020 (to 89.65 per cent and 80.92 per cent respectively).

**Figure 7. Proportion of transboundary river and lake basin area in a country covered by an operational arrangement**



**Figure 8. Countries sharing river and lake basins and breakdown of SDG 6.5.2 indicator values (comparison between 2017 and 2020 data)<sup>20</sup>**



Europe and North America show the fullest coverage of operational arrangements, with 27 out of 42 countries reporting that operational arrangements cover 90 per cent or more of their transboundary river and lake basin area, followed by sub-Saharan Africa (18 of 42 countries). Coverage of 90 per cent or more is less common in Central, Eastern, Southern and South-Eastern Asia combined (only six countries out of 25), Latin America and the Caribbean (only four out of 22 countries) and the North Africa and Western Asia region (only one out of 17 countries).

### 3.1.3. SDG indicator 6.5.2 for transboundary aquifers

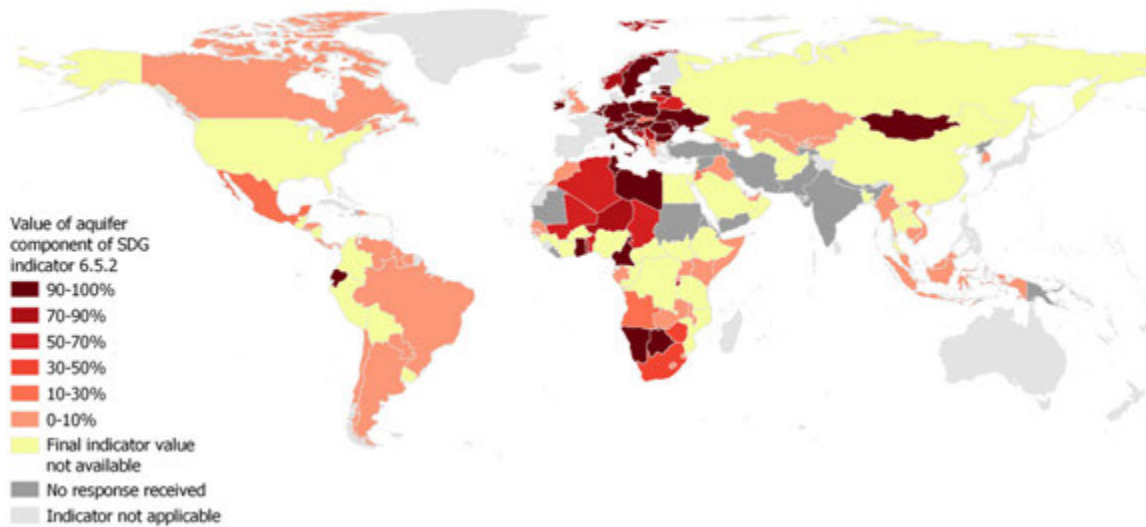
As noted in chapter 2, the transboundary aquifer component of the indicator is now available for 94 countries compared with 65 in 2017. The global average of the aquifer component is 42 per cent (compared with 48 per cent in 2017). This reflects the fact that the additional 29 countries with an aquifer component value report in general a lower value than the initial 65 countries. For instance, 30 countries reported that operational arrangements covered 30 per

<sup>20</sup> The total number of countries sharing river and lake basins differs between 2017 and 2020, due to several countries confirming that their share of a particular basin is negligible. In this regard, the reporting template stipulates that "States may decide to ... leave out basins in which their share is very minor, e.g. below 1 per cent".

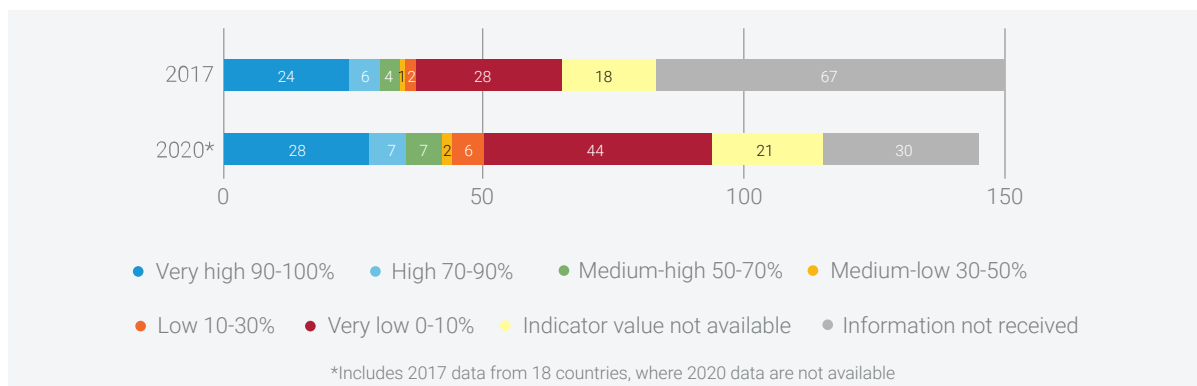
cent or less of their transboundary aquifer area in 2017, compared with 50 countries based on 2017–2020 combined data. This represents over a third of all countries sharing transboundary

aquifers, and points to the need to strengthen efforts to ensure that operational arrangements cover all transboundary aquifers by 2030.

**Figure 9. Proportion of transboundary aquifer area in a country covered by an operational arrangement**



**Figure 10. Number of countries sharing transboundary aquifers and breakdown of SDG 6.5.2 indicator value (comparison between 2017 and 2020 data)<sup>21</sup>**



These efforts should be supported by increased capacity in assessing transboundary aquifers as, in addition to 22 countries reporting that aquifer data are unavailable, many countries with '0' or

'100' per cent value have also presented limited information on aquifers, and may require support to deepen their knowledge and understanding of their transboundary aquifers.<sup>22</sup>

21 The total number of countries sharing transboundary aquifers differs between 2017 and 2020 due to several countries confirming – by undertaking additional checking, for instance with geological surveys, and incorporating additional information on their (hydro) geological conditions – that the possibility to host transboundary aquifers is very limited.

22 See section 4.4, Box 4.

According to the SDG indicator 6.5.2 methodology, an aquifer can be considered in the computation of the indicator value if: i) it is covered by an aquifer-specific arrangement; ii) it is covered under arrangements initially developed for a particular river basin that also include groundwater/aquifers, or in some cases, bilateral arrangements covering all transboundary waters.<sup>23</sup>

Only 12 countries report having a total of eight aquifer-specific arrangements in place.<sup>24,25</sup> In most cases, countries reported under the second modality. However, this approach captures many different situations. In some cases, the reporting of aquifers associated with river basins is a precursor to developing more detailed assessments of the relationship between surface-water and groundwater interactions within a particular country or region, or to strengthening existing governance arrangements to better account for groundwater characteristics. In other cases, more targeted work on groundwater, or specific transboundary aquifers, already takes place through action plans, subsidiary arrangements, or the creation of groundwater task forces (see examples in section 4.3.1).

In terms of SDG regions, Europe and North America is the most advanced with 24 out of 36 countries in the region reporting that operational arrangements cover 70 per cent

or more of their transboundary aquifers, while Central, Eastern, Southern and South-Eastern Asia; Latin America and the Caribbean; and Northern Africa and Western Asia present a very low SDG indicator value for transboundary aquifers among most countries. This is despite the importance of groundwater within the arid and semi-arid climate found in large parts of these regions. Notable exceptions in the latter regions include the operational arrangements in place for the large aquifers (as described in the following sections). Sub-Saharan Africa presents a more intermediate situation, although the majority of countries still report that operational arrangements for transboundary aquifers are lacking, or that they have difficulties in obtaining data on their transboundary aquifers.

## 3.2. Regional progress in transboundary water cooperation<sup>26</sup>

### 3.2.1. Central, Eastern, Southern and South-Eastern Asia

Of the 30 countries in Central, Eastern, Southern and South-Eastern Asia, 25 share transboundary rivers, lakes and aquifers. Notable examples of transboundary water cooperation include the Mekong River Basin, where the Lower Mekong countries (Cambodia, Laos, Thailand

23 A full integrated approach that considers the joint management of surface water and groundwater (which should be promoted) has been effective in a few recent arrangements (see Lautze and others, 2018).

24 These are the North-Western Sahara Aquifer System Cooperation Mechanism; the Guaraní Aquifer Agreement; the Nubian Sandstone Aquifer System Board of Directors (Joint Authority for the Study and Development of the Nubian Sandstone Aquifer System, JASAD-NSAS); the Statement of Intent on the Governance of the Ocoatepeque – Citalá Aquifer; the Agreement over the Al-Sag /Al-Disi Aquifer; the Cooperation Agreement between the Lithuanian Geological Survey under the Ministry of Environment (LGT) and the Latvian Environment, Geology and Meteorology Centre (LVGMC) on cross-border groundwater monitoring (2016); and the Transboundary Aquifer Assessment Program between Mexico and the U.S. (2009). In addition, the Consultation Mechanism for the Integrated Management of the Water Resources of the Lullemeden and Taoudeni/Tanezrouft Aquifer Systems (ITTAS), initiated with the signing of a memorandum of understanding by Algeria, Burkina Faso, Benin, Niger, Nigeria, Mali, Mauritania, is also mentioned by several countries.

25 Twenty countries share these aquifers, eight of which did not report on transboundary aquifer arrangements mentioned by a neighbouring country.

26 Regional groupings in this section are based on SDG indicator regions. For a breakdown of countries per region, please see <https://unstats.un.org/sdgs/indicators/regional-groups/>.



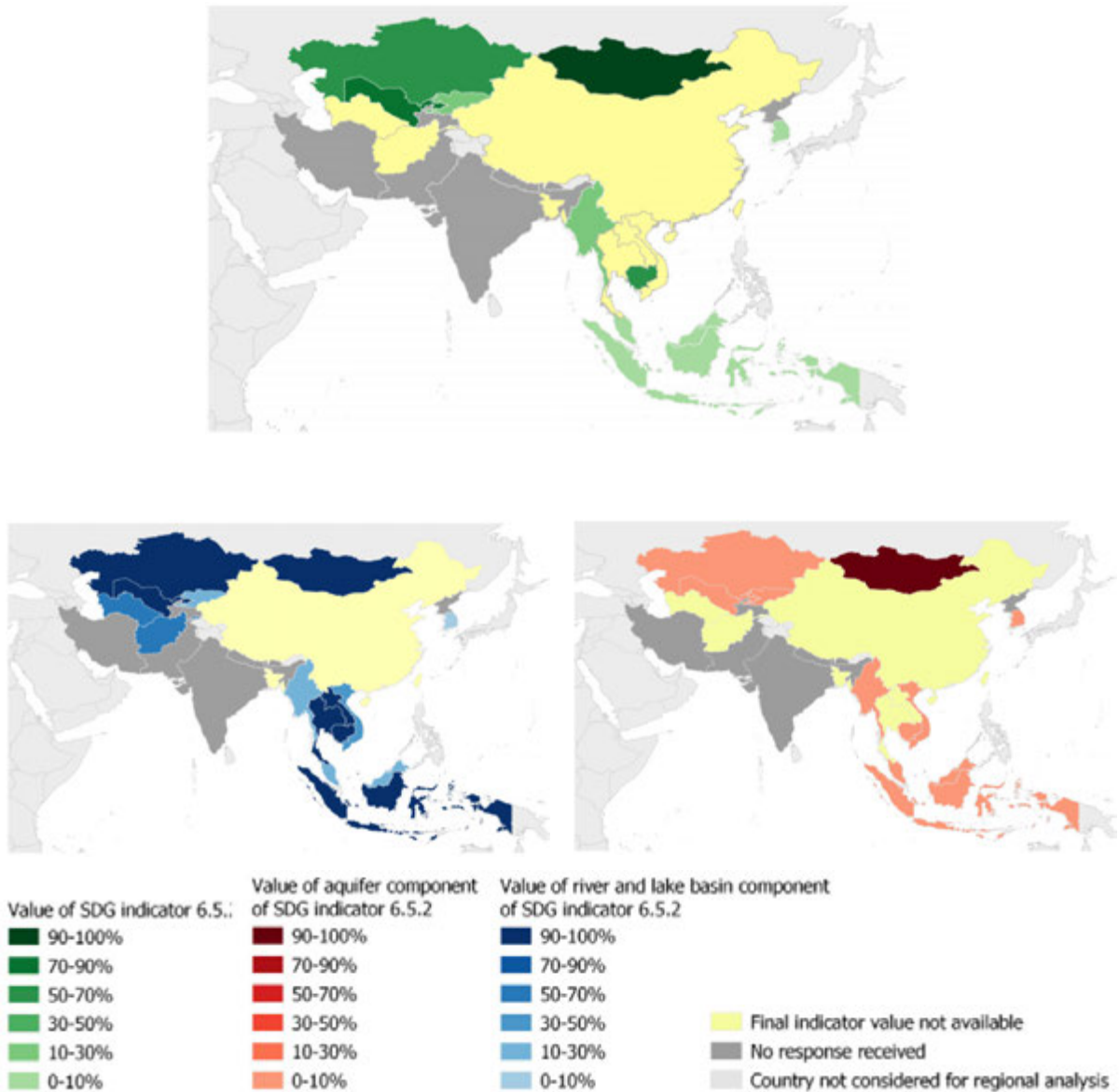
and Vietnam) cooperate pursuant to the 1995 Mekong Agreement, and cooperation with the upstream countries (China and Myanmar) continues to evolve through the Lancang-Mekong Cooperation Mechanism. However, several major transboundary basins in the region, including the Ganges-Brahmaputra-

Meghna River Basins between Bangladesh, Bhutan, China, India and Nepal; the Salween River Basin between China, Myanmar and Thailand; the Irrawaddy River Basin between China, India and Myanmar; and the Red River Basin between China and Vietnam, are lacking basin-wide operational arrangements.



Mekong river in Laos, © Thierry Leclerc / Flickr - Creative Commons

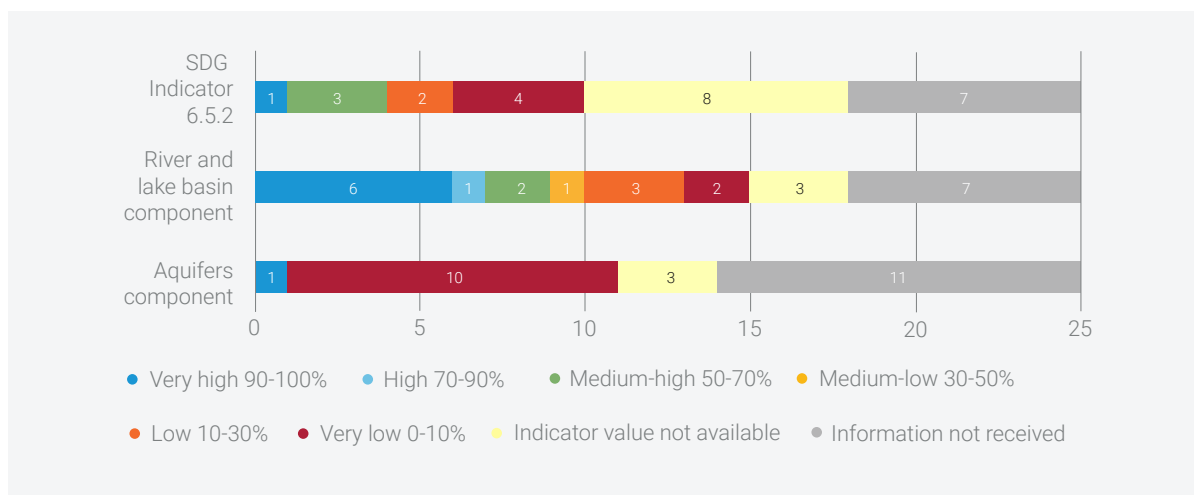
**Figure 11. Central, Eastern, Southern and South-Eastern Asia – Proportion of transboundary basin area in a country covered by an operational arrangement**



This region has experienced the highest increase in response rate between the 2017 and 2020 monitoring exercises. Both the number of countries reporting and the number of countries with a final indicator value have increased significantly.

The overall indicator value is now available for 10 countries compared with two in 2017: Brunei Darussalam (0 per cent), Cambodia (56 per cent), Indonesia (1 per cent), Kazakhstan (63 per cent), Kyrgyz Republic (27 per cent), Malaysia (2 per cent), Mongolia (100 per cent), Myanmar (20 per cent), Republic of Korea (0 per cent) and Uzbekistan (70 per cent).

**Figure 12. Central, Eastern, Southern and South-Eastern Asia – Number of countries sharing transboundary rivers, lakes and aquifers and breakdown of SDG 6.5.2 indicator values**



Twenty-five out of 30 countries in the Central, Eastern, Southern and South-Eastern Asia region share transboundary river and lake basins. In 2017, river and lake basin data were only available for six countries within the region, whereas 2017–2020 combined data are now available for 15 countries. These combined data show that there is still a considerable number of countries where operational arrangements are lacking. Only six countries out of 25 sharing transboundary river and lake basins reported having operational arrangements covering 90 per cent or more of their basin area. These countries include several of the Mekong River Basin countries (Cambodia, Lao People’s Democratic Republic (Lao PDR) and Thailand), as well as Kazakhstan, Uzbekistan and Indonesia.

In terms of aquifers, all but one country (Mongolia) reported that no arrangements cover their transboundary aquifer areas. Mongolia, which reported 100 per cent coverage, made reference to its bilateral arrangements

established with China and Russia. All countries reporting on 6.5.2 within the region also mentioned low to mid-level implementation of aquifer management national instruments in the context of SDG indicator 6.5.1 reporting, which combined with 6.5.2 results suggests a need to enhance capacity regarding groundwater management at both the transboundary and national levels (UNEP, 2021).<sup>27</sup>

### 3.2.2. Northern Africa and Western Asia

Of the 23 countries that represent the Northern Africa and Western Asia region, 21 share transboundary rivers, lakes and aquifers. Across the region, surface water availability tends to be intermittent due to an arid to semi-arid climate. Groundwater supplies therefore play a major role in securing sufficient supplies of water at both the national and transboundary levels. At the transboundary level, notable aquifer-specific cooperative arrangements include those

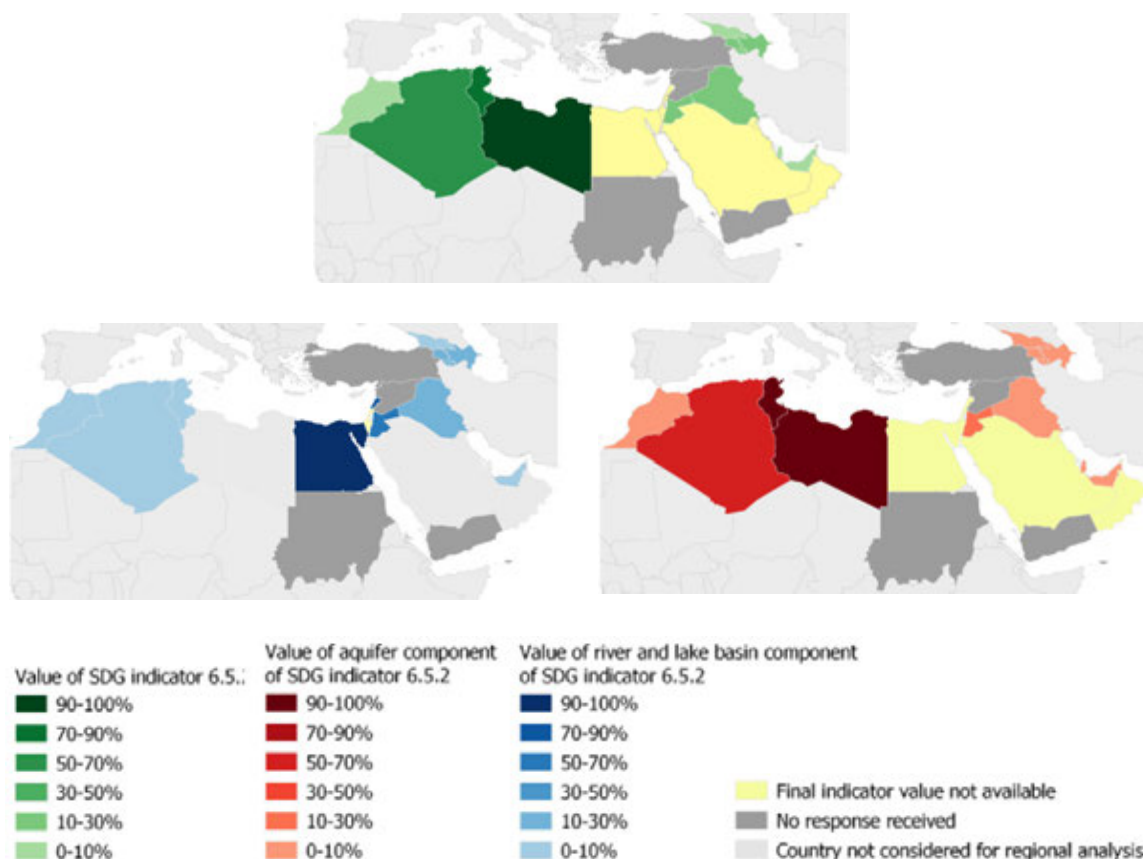
<sup>27</sup> See also UNEP-DHI (2020). IWRM Data Portal. Available at <http://iwrmdataportal.unepdhi.org/currentdatacollection>. Accessed on 13 April 2021.

established for the North-Western Sahara Aquifer System shared between Algeria, Libya and Tunisia, the Nubian Sandstone Aquifer System between Chad, Egypt, Libya and Sudan, and the Al-Disi/ Saq-Ram Aquifer between Jordan and Saudi Arabia.

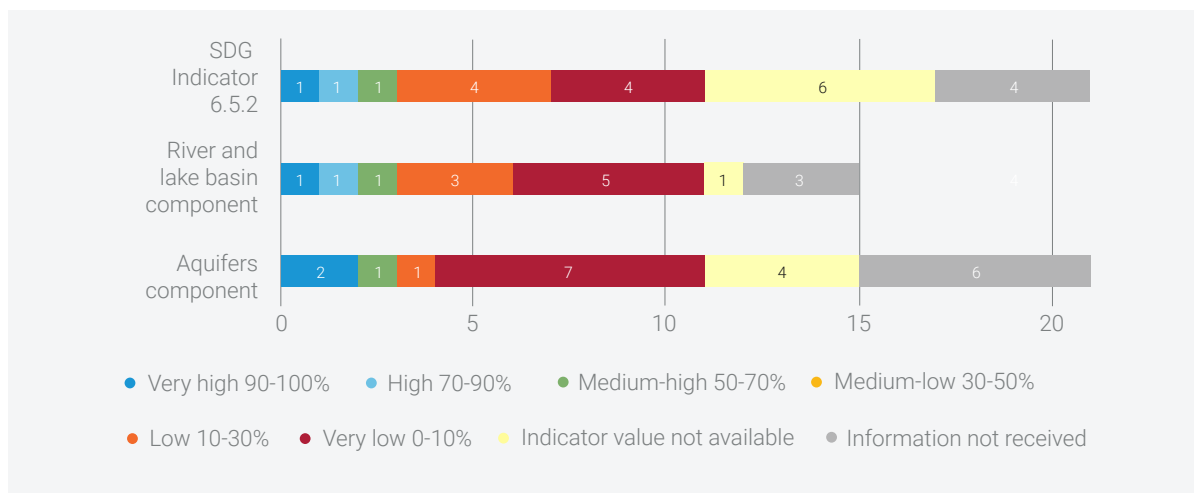
Fifteen out of 23 countries in Northern Africa and Western Asia share transboundary river and lake basins. In 2017, 12 countries submitted national reports and an indicator value for river and lake basins was available for seven of them. Combined data for 2017–2020 are available for 11 countries. These data show that only one

country (Egypt) has all of its transboundary river and lake basin area covered by an operational arrangement, followed by Lebanon (with 76 per cent of basin area covered), and Jordan (with 62 per cent of basin area covered). The other eight countries where an indicator is available have between 0 and 28 per cent of their basin area covered by operational arrangements. Ensuring that operational arrangements cover all transboundary river and lake basins within Northern Africa and Western Asia will require a significant effort.

**Figure 13. Northern Africa and Western Asia – Proportion of transboundary basin area in a country covered by an operational arrangement**



**Figure 14. Northern Africa and Western Asia – Number of countries sharing transboundary rivers, lakes and aquifers and breakdown of SDG 6.5.2 indicator values**



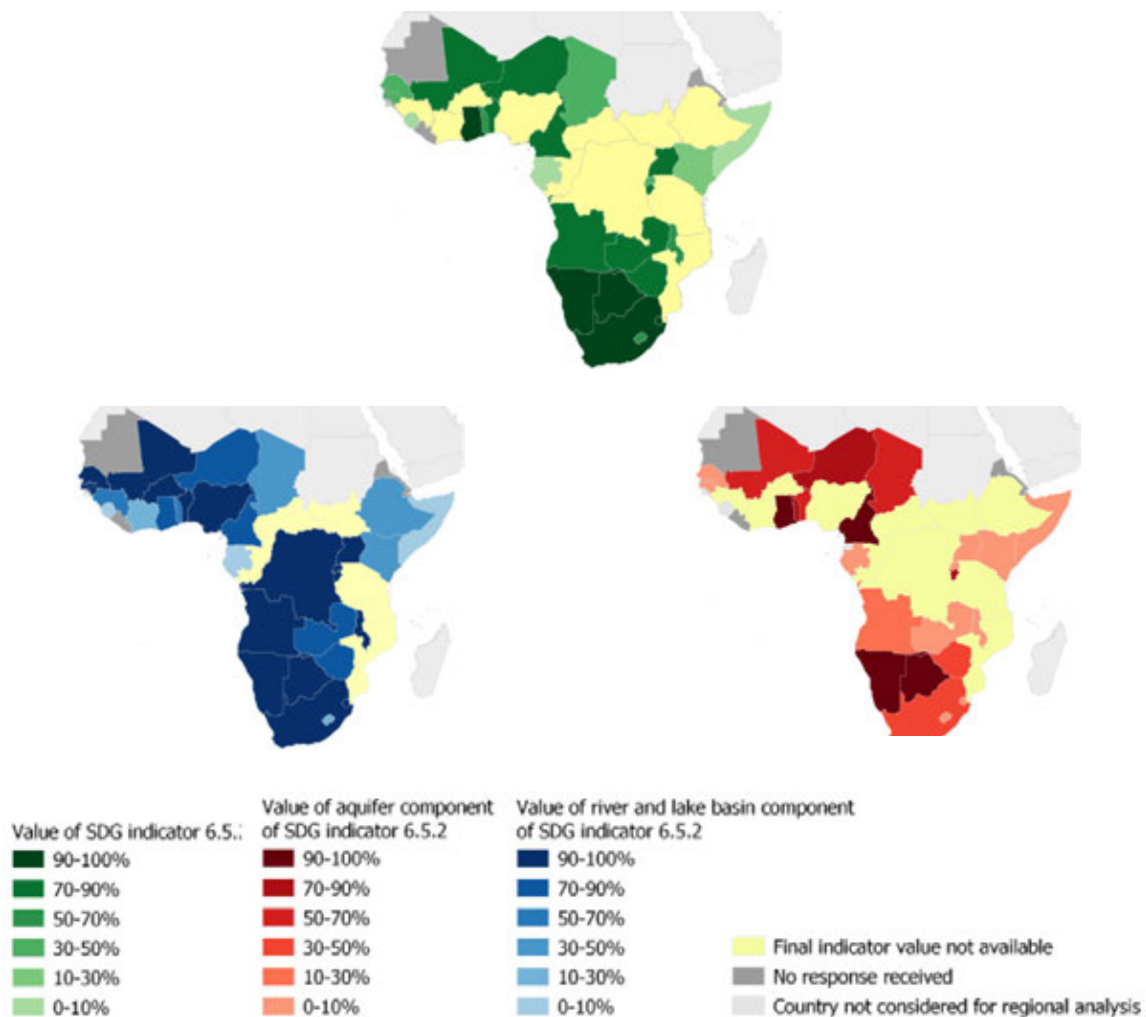
Twenty-one out of 23 countries in Northern Africa and Western Asia share transboundary aquifers. Three of these countries have operational arrangements covering 50 per cent or more of their transboundary aquifer area (Algeria, Tunisia and Libya). These countries are reliant upon the aforementioned North-Western Sahara Aquifer System and Nubian Sandstone Aquifer System. Jordan, which has an SDG indicator 6.5.2 aquifer indicator value of 15 per cent, is party to the aforementioned Al-Disi/Saq-Ram Aquifer arrangement. At the national level, most countries reported having some aquifer-level management instruments implemented on a more long-term basis, but with limited geographic and stakeholder coverage – with the Arabian Peninsula countries reporting high levels of implementation of aquifer legal management instruments, and Georgia and Lebanon reporting low levels (UNEP, 2021). Generally medium to high levels of implementation of aquifer management instruments in most countries suggest an

important basis from which to develop and strengthen arrangements at the transboundary level.

### 3.2.3. Sub-Saharan Africa

Of the 48 countries in sub-Saharan Africa, 42 share transboundary rivers, lakes and aquifers. As noted, relatively high levels of operational arrangements are in place for these transboundary waters compared with other regions. This is due to the conclusion of operational arrangements for most of the major watercourse systems, including the Senegal, Volta, Niger, Congo, Zambezi, Okavango, Limpopo and Orange-Senqu watercourses. While often orientated towards surface waters, these arrangements tend to cover groundwater interacting with the surface water of the basin within their scope.

**Figure 15. Sub-Saharan Africa – Proportion of transboundary basin area in a country covered by an operational arrangement**



All 42 countries in sub-Saharan Africa sharing transboundary waters share transboundary river and lake basins. In 2017, the SDG indicator value was available for 18 of these countries, whereas 2017–2020 combined data now provide an indicator value for 33 countries. As noted, sub-Saharan Africa has relatively high levels of transboundary basin area covered by operational arrangements: in 18 out of 42 countries reporting, 90 per cent or more of the transboundary basin area is covered by such arrangements. This may be due to the long tradition of transboundary cooperation through

basin organizations, such as the Senegal River Basin Development Organization, the Niger Basin Authority, the Permanent Okavango River Basin Water Commission, the Orange-Senqu River Commission and the Lake Chad Basin Commission, as well as the work of regional organizations, including the Southern Africa Development Community (SADC), the Economic Community of West African States (ECOWAS) and the Economic Community of Central African States (ECCAS). However, despite this progress, ensuring that operational arrangements cover all transboundary river and lake basins in

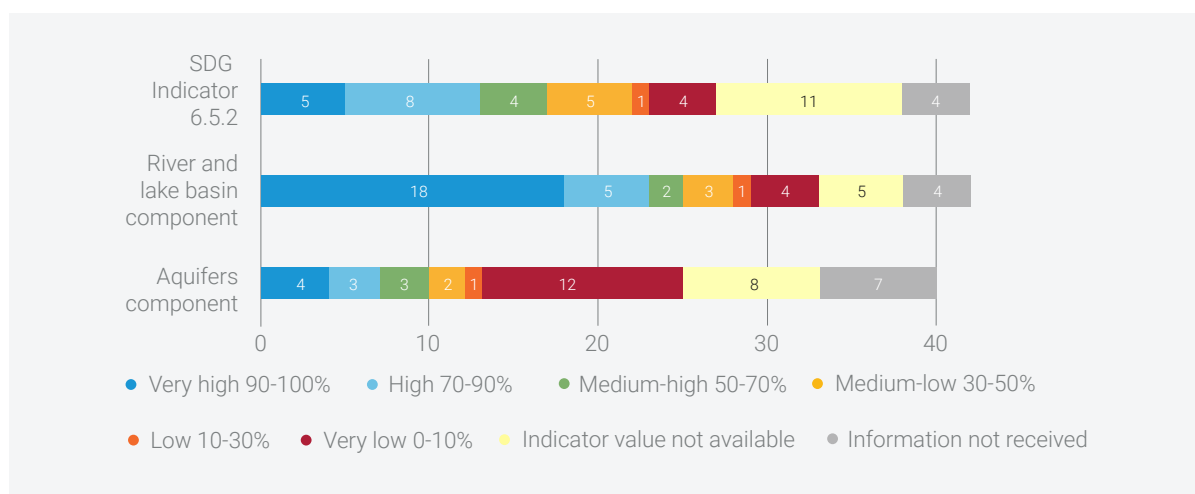


sub-Saharan Africa still requires a significant effort and progress varies according to subregions, e.g. Central Africa is less advanced.

In relation to transboundary aquifers, the majority of countries report having no applicable arrangement, or are unable to report on the aquifer component of the indicator due to data gaps. The southern part of the region represents the most advanced values for the aquifer component. This may in part be due to the incorporation of groundwater interacting with surface water within most of the major watercourse arrangements, as well as a concerted effort through SADC’s Regional Strategic Action Plans for IWRM to promote sustainable groundwater management.<sup>28</sup> Similar initiatives to consider groundwater management within the context of river basin agreements are found in the northern part of the region, with several countries considering that aquifers are included within the Volta, Niger and Lake Chad basin arrangements.

The number of countries in the “high” and “very high” categories for the river and lake basin component of the indicator across the sub-Saharan region suggests that there may be additional opportunities to capitalize on existing watercourse arrangements in order to better account for transboundary aquifers. Such an approach would be particularly relevant where existing arrangements are operational and where aquifer boundaries are broadly within the boundaries of the river and lake basins. Large aquifer systems may require innovative approaches, such as the approach taken by the countries sharing the Senegalo-Mauritanian Aquifer. In this case, the Senegal River Basin Development Organization and the Gambia River Basin Development Organization engage in discussions concerning the development of cooperative arrangements for the aquifer, despite the mismatch in the boundaries between the three systems. At the national level, the implementation of aquifer management instruments reported in the context of SDG indicator 6.5.1 varies considerably (UNEP, 2021).

**Figure 16. Sub-Saharan Africa – Number of countries sharing transboundary rivers, lakes and aquifers and breakdown of SDG 6.5.2 indicator values**



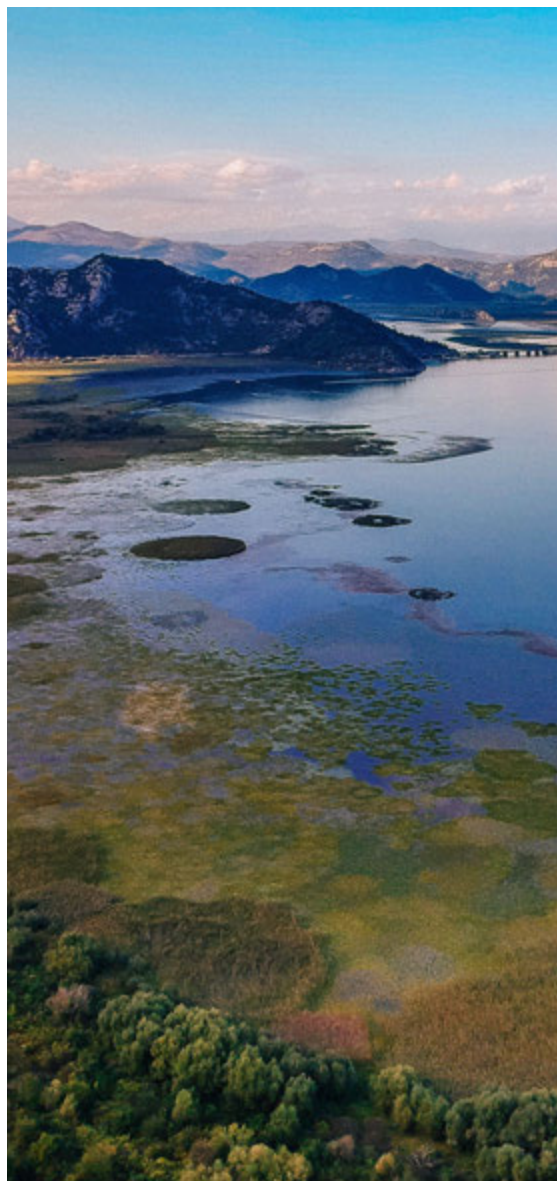
<sup>28</sup> The coverage of transboundary aquifers by arrangements developed at the river basin scale raises the issue of the aquifer areas that lie outside the limits of the river basin boundaries, such as the case of the Karoo Sedimentary Aquifer with regard to the scope of the 2000 Agreement for the Establishment of the Orange-Senqu Commission.

### 3.2.4. Europe and Northern America

Of the 45 countries in Europe and North America, 42 countries share transboundary rivers, lakes and aquifers. The long tradition of entering into arrangements for transboundary water cooperation throughout Europe is reflected in two major regional frameworks for water resources management, the 2000 European Union Directive 2000/60/EC establishing a framework for community action in the field of water policy (Water Framework Directive) and the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), which support the development of additional cooperative frameworks. Likewise, transboundary water cooperation has a long history in North America, as demonstrated by the 1909 Boundary Waters Treaty between Canada and the United States and the 1944 Treaty between Mexico and the United States for the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande.<sup>29</sup>

All 42 countries in the Europe and North America region sharing transboundary waters share transboundary river and lakes. In 2017, the indicator value for river and lake basins was available for 36 of these countries, whereas 2017–2020 combined data are available for 39 countries. As noted, the European and North American region also report relatively high levels of transboundary basin area covered by operational arrangements, with notable developments when comparing 2017 data with 2017–2020 combined data. For example, in 2017, only 19 countries within the region reported operational arrangements covering 90 per cent or more of their transboundary river and lake basins. This rises to 27 countries in

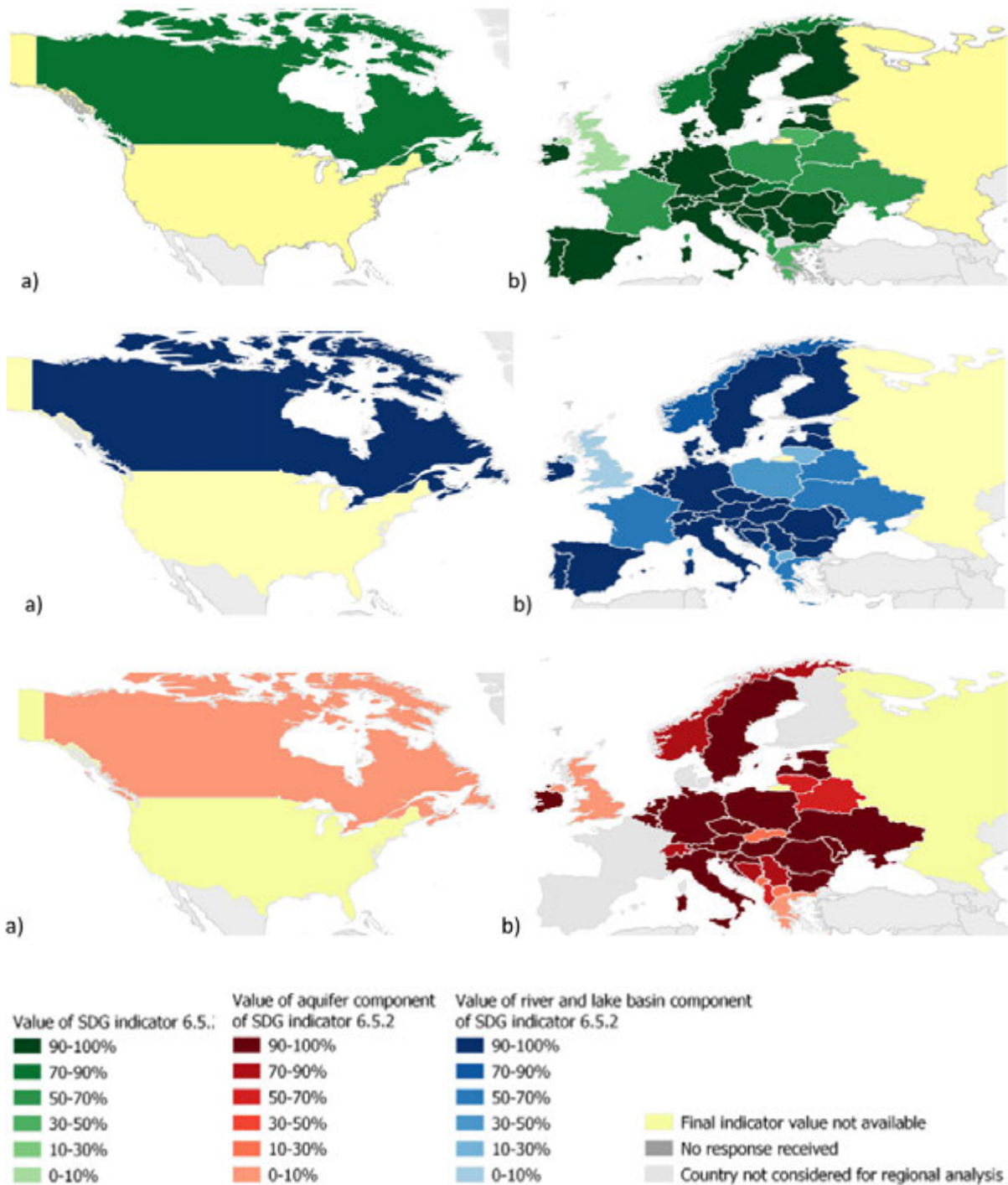
the 2017–2020 data. Europe and North America therefore represents the most advanced region in terms of having operational arrangements for transboundary water cooperation in place and is the region most likely to be on track to have all river and lake basins covered by operational arrangements by 2030.



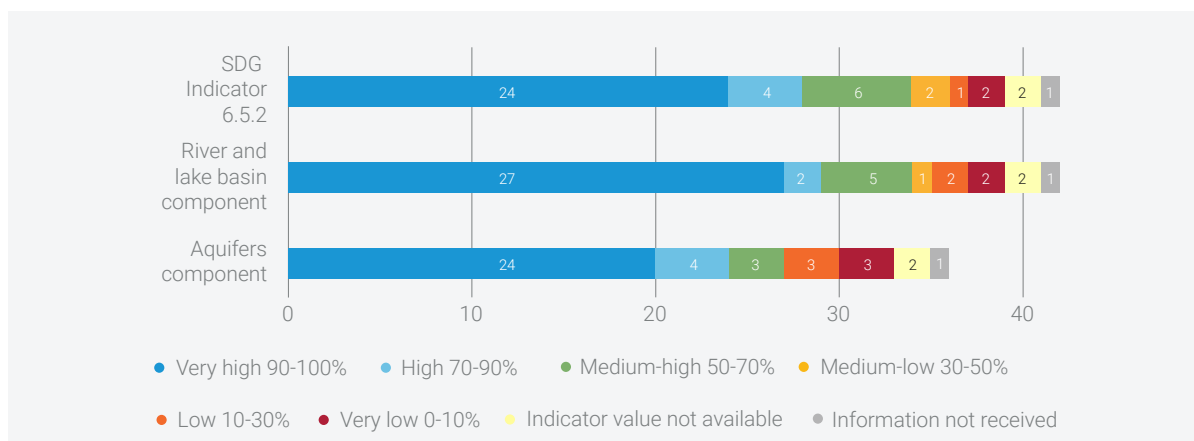
Lake Skadar shared by Albania and Montenegro, © Oleg Gratilo / Unsplash - Creative Commons

<sup>29</sup> As Mexico falls within the Latin America and the Caribbean SDG regional grouping, only the parts of the transboundary basins within the United States are considered in this section.

**Figure 17. Europe and Northern America – Proportion of transboundary basin area in a country covered by an operational arrangement (a-North America; b-Europe)**



**Figure 18. Europe and North America – Number of countries sharing transboundary rivers, lakes and aquifers and breakdown of SDG 6.5.2 indicator values**



In terms of aquifers, 24 countries in Europe and North America report having 70 per cent or more of their aquifer area covered by operational arrangements. In most of these instances, river and lake basin arrangements incorporate groundwater. Within the European Union context, this may be driven in part by the EU Water Framework Directive, which requires member states to define and manage “groundwater bodies” within “river basin districts”.<sup>30</sup>

Some countries justified why the aquifer component calculation was not relevant to them. This justification was based mainly on hydrogeological criteria, noting for instance that no major aquifer layers were located in their country’s territory, and/or confirming that no transboundary aquifers have so far been inventoried.

Several countries in the region, such as Germany and the Netherlands, do not provide figures for the total area of their territory within a transboundary aquifer or aquifers. This is because operational arrangements cover all

their transboundary waters, and the indicator value will therefore be 100 per cent irrespective of the surface area of their aquifers. However, this raises a question regarding the level of knowledge of transboundary aquifers within the region. Nevertheless, there are also encouraging signs of progress insofar as countries have reported new aquifers and/or provided more precise total area estimates for the second monitoring exercise, such as in the case of Albania and Sweden.

In Europe, two specific aquifer arrangements were reported to be in place:

- the 2008 Convention on the Protection, Utilization, Recharge and Monitoring of the Franco-Swiss Genevois Aquifer and
- the 2016 Cooperation Agreement between the Lithuanian Geological Survey under the Ministry of Environment and the Latvian Environment, Geology and Meteorology Centre on cross-border groundwater monitoring.<sup>31</sup>

<sup>30</sup> See [https://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF)

<sup>31</sup> See also the arrangement between the United States and Mexico, as described in section 3.2.5.

With some exceptions, countries across the region report implementing national-level aquifer management instruments on a more long-term basis, as reported in the context of SDG indicator 6.5.1, with effective to very effective outcomes and very good to excellent geographic and stakeholder coverage (UNEP, 2021).

### **3.2.5. Latin America and the Caribbean**

Of the 33 countries that make up the Latin America and the Caribbean region, 22 share transboundary rivers, lakes and aquifers. The region contains a diverse range of transboundary waters, from major rivers shared between several countries, such as the Amazon (Bolivia, Brazil, Colombia, Ecuador, Guyana and Peru), Orinoco (Colombia, Guyana and Venezuela) and La Plata (Argentina, Bolivia, Brazil and Paraguay) Rivers, to the Guarani Aquifer System (Argentina, Brazil, Paraguay and Uruguay), and the numerous smaller basins shared between two or more countries. For example, while the Amazon covers an area of 850,371 km<sup>2</sup>, Argentina and Chile share 17 river basins that represent a total area of 131,221 km<sup>2</sup>.

All 22 countries in the Latin America and the Caribbean region that share transboundary waters share transboundary river and lake basins. Out of those 22 countries, 14 countries

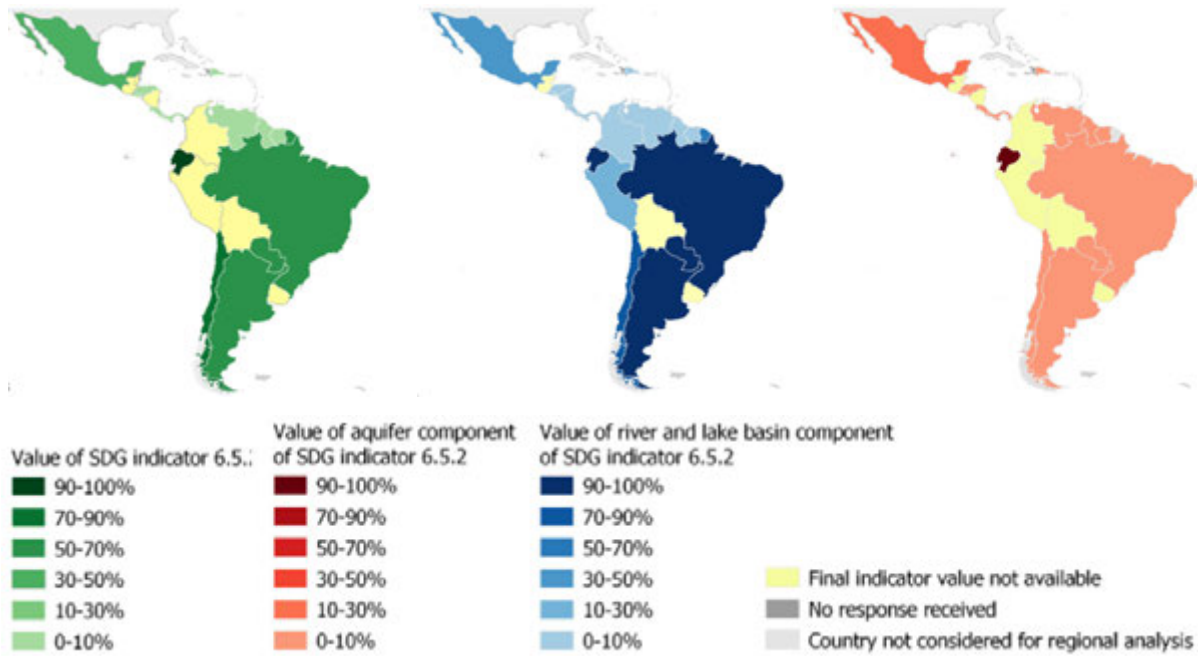
submitted responses during the first monitoring exercise, which increased to 19 in the second reporting cycle. While more data are therefore available, these data show that the majority of countries have low coverage of operational arrangements. For instance, 10 countries have 10 per cent or less of their transboundary river and lake basin area covered by operational arrangements, and only four countries (Argentina, Brazil, Ecuador and Paraguay) have 90 per cent or more of their transboundary river and lake basin area covered.

Of the major river basins in the region, arrangements are in place for the Amazon River Basin, the La Plata River Basin, and the Lake Titicaca-Poopó Basin. However, ensuring operational arrangements are in place for all transboundary river and lake basins across the region by 2030 requires a significant effort.

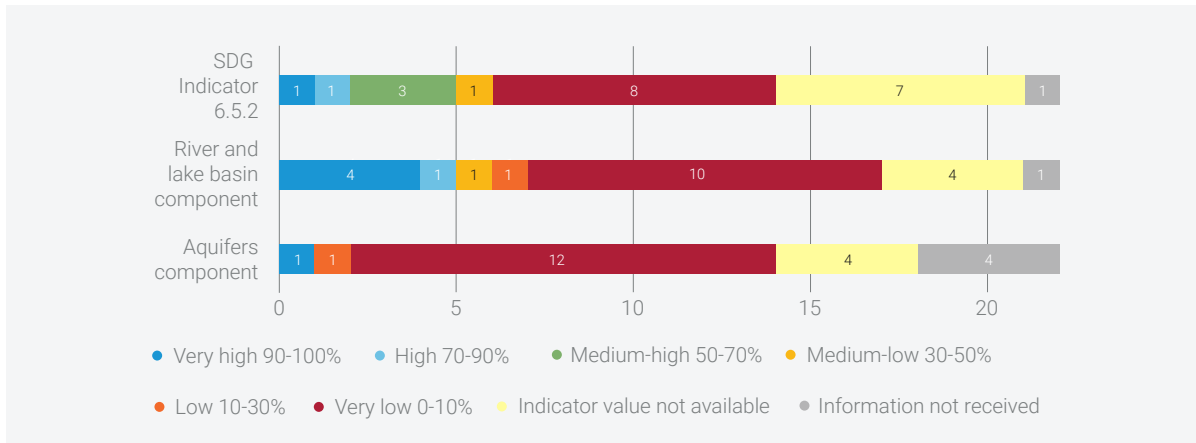
A positive example of such progress can be seen in the adoption of the 2017 Agreement and Binational Commission for Integrated Management of Water Resources in the Transboundary River Basins between Peru and Ecuador, which covers nine transboundary basins and a total area of 170,302 km<sup>2</sup> (Izquierdo, 2021).



**Figure 19. Latin America and the Caribbean – Proportion of transboundary basin area in a country covered by an operational arrangement**



**Figure 20. Latin America and the Caribbean – Number of countries sharing transboundary rivers, lakes and aquifers and breakdown of SDG 6.5.2 indicator values**



Low levels of coverage of operational arrangements within river and lake basins in Latin America and the Caribbean also influence the levels of coverage for transboundary aquifers. The number of countries not reporting on aquifers is high compared with other regions,

which represents an opportunity to work with countries on future activities. Implementation of aquifer management instruments is also low at the national level (UNEP, 2021), suggesting a need to strengthen governance arrangements at both the national and transboundary levels.



A notable exception is the Guarani Aquifer-specific arrangement between Argentina, Brazil, Paraguay and Uruguay that entered into force on 26 November 2020. The Transboundary Aquifer Assessment Program between Mexico and the United States of America, as reported by Mexico, is another noteworthy initiative (UNEP, 2021).<sup>32</sup>

### 3.3. Addressing data gaps through SDG indicator 6.5.1 data

As already noted, the SDG 6.5.2 indicator value is now available for 101 out of 153 countries sharing transboundary rivers, lakes and aquifers. This represents a significant improvement in coverage of the SDG indicator 6.5.2 from the first monitoring exercise, and allows for a fuller overview of basin coverage at both the global and regional levels. Most major basins around the world are now represented in the SDG indicator 6.5.2 monitoring exercise, due to at least one of the countries in those basins submitting a national report.

However, notable exceptions include the Ganges-Brahmaputra-Meghna River Basin shared between Bangladesh, Bhutan, China, India and Nepal; the Helmand River between Afghanistan, Iran and Pakistan; and the Indus River between Afghanistan, China, India and Pakistan. While some of these countries may have submitted reports, indicator values are not available. Arrangements for transboundary water

cooperation are in place within some of these basins, although it is unlikely that any of these arrangements cover the entire basin, and/or satisfy all operationality criteria.

Out of the 52 countries where an indicator value is not available, the country response to the SDG indicator 6.5.1 second monitoring exercise in 2020 offers some insight into progress towards operational arrangements (UNEP, 2021). The SDG indicator 6.5.1 survey contains 33 questions on the degree of implementation of various aspects of IWRM, including four questions at the transboundary level relating to:

- (i) agreements
- (ii) organizational frameworks
- (iii) data- and information-sharing and
- (iv) financing for transboundary cooperation.

Forty-three of the aforementioned 52 countries provided responses to the transboundary questions contained in the SDG indicator 6.5.1 survey. The majority of these countries (37) considered that they had adopted arrangements for their most important transboundary rivers, lakes and aquifers, and a subset of 13 countries considered that the provisions of these arrangements were either mostly or fully implemented (UNEP, 2021).<sup>33</sup> Having arrangements either mostly or fully implemented might suggest something close to an arrangement being operational. However, such a finding could be confirmed only by assessing whether or not the four operationality criteria are in place.

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32 Mexico falls within the SDG indicator regional grouping for Latin America and the Caribbean, whereas the United States falls within the North America and Europe regional grouping.

33 These countries were spread across regions. They were China, Republic of Congo, Democratic People's Republic of Korea, India, Israel, Lao People's Democratic Republic, Monaco, Russian Federation, South Sudan, Sudan, Turkmenistan, United Republic of Tanzania and the United States of America.

# ● 4. Accelerating progress towards operational arrangements

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## 4.1. Introduction

As noted in the introduction to this report, a number of areas to accelerate progress towards SDG 6 achievement are set out in the SDG 6 Global Acceleration Framework. The framework considers four action pillars as “the broad entry points for coordinated action”, namely:

- **engage** – swift responses to country requests through leveraged expertise and mobilization
- **align** – coordinated approaches across sectors and actors through unified strategies (gender issues)
- **accelerate** – unlock bottlenecks through five accelerators (financing, data, capacity, innovation and governance) and
- **account** – strengthened accountability through joint review and learning (UN-Water, 2020a).

While not sticking strictly to these four action pillars, this chapter considers a number of ways to accelerate transboundary water cooperation in line with them. It focuses in particular on how countries might i) advance both their negotiation and adoption of arrangements for transboundary water cooperation and ii) ensure that those arrangements are operational.

With this in mind, section 4.2 looks at recent experience in negotiating and adopting new arrangements for transboundary water cooperation, and some of the factors that ensured a successful outcome to those negotiations. Section 4.3 then looks at situations where existing non-operational arrangements might be enhanced in order to meet the four criteria of operability. Section 4.4 highlights how the SDG indicator 6.5.2 monitoring exercise can itself help foster transboundary water cooperation by, in particular, improving the knowledge base. Finally, section 4.5 considers several additional factors that can support countries in accelerating progress towards transboundary water cooperation.

## 4.2. Successfully negotiating arrangements for transboundary water cooperation

### 4.2.1. Overview of recent developments

Achieving the aim of having all transboundary basins covered by operational arrangements by 2030 will require a major effort.

One encouraging sign is that countries are continuing to negotiate, adopt and develop arrangements for transboundary water cooperation.<sup>34</sup> For instance, Figure 21 shows some of the recent developments by countries

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<sup>34</sup> For a discussion on different types of arrangements, see page 13 to 15 of United Nations Economic Commission for Europe [UNECE] (2020a) and page 43 to 45 of United Nations Economic Commission for Europe (UNECE) and United Nations Educational, Scientific and Cultural Organization (UNESCO) (2018).

to negotiate new arrangements concerning their transboundary waters. In addition to these new arrangements, several countries noted that they were in the process of negotiating or updating agreements, such as the agreement between Finland and Sweden on the Torne River; the transboundary agreement between Equatorial Guinea, Cameroun and Gabon on their shared waters; the agreement between Azerbaijan and Georgia on the Kura River Basin; and the 2019 letter of intent between Honduras and El Salvador on the governance and comprehensive management of the Ocotepeque – Citalá Aquifer.

Other countries noted that they had reinvigorated existing arrangements to make them operational. For example, in June 2020 the Prespa Park Coordination Committee (originally established under the 2010 Prespa Lakes Agreement between Albania, Greece and North Macedonia) was revitalized. In January 2020, the Watershed Management Committee for the Ohrid Lake was re-established on the basis of the 2004 Lake Ohrid Agreement between Albania and North Macedonia.

There are also clear examples of countries deepening their cooperation on specific issues, such as the 2018 Memorandum of Understanding on the Development and Monitoring of Fisheries and Related Research Cooperation in Finnish–Russian Transboundary Waters; the 2020 Memorandum of Understanding on Cooperation Concerning Regular Functioning and Maintenance of the Flood Forecasting and Warning System in the Sava River Basin; the Groundwater Committee launched by the Limpopo Watercourse Commission (LIMCOM) in 2019; and the Zambezi Watercourses Commission's (ZAMCOM) establishment of a groundwater subgroup in 2020. Another noteworthy recent development is the 2017 arrangement between France and Belgium for the provision of data relating to

the management of groundwater from the Carboniferous Aquifer, which was developed through the Scheldt Commission.

#### **4.2.2. Selected cases of countries accelerating progress towards operational arrangements**

##### **Cooperation between Kazakhstan and Uzbekistan on Syr Darya**

In 2017, the Presidents of Kazakhstan and Uzbekistan gave strong impetus to cooperation on the Syr Darya River Basin. During the President of Uzbekistan's visit to Kazakhstan, the two leaders signed the Strategy of Economic Cooperation between the Government of the Republic of Kazakhstan and the Government of the Republic of Uzbekistan for the 2017–2019 period. Among other measures, the strategy envisaged strengthening cooperation on the Syr Darya River Basin.

Consequently, a bilateral Working Group on Environmental Protection and Water Quality in the Syr Darya River Basin was established in 2018 to implement the strategy and the intergovernmental Agreement on Cooperation in Environmental Protection and Rational Use of Natural Resources, which was concluded in 1997. The working group held three meetings during 2018–2020, including a virtual one in 2020, and achieved the following results:

- Countries agreed on 28 water quality parameters and four sampling locations (two in each country) for joint surface-water monitoring.
- Sampling was carried out five times in 2018–2020 and data comparability was recognized as acceptable.
- Joint assessment of the state of the basin area was carried out.

- National experts from each country visited the laboratories in the other country.
- Notification mechanisms in the event of extreme pollution were agreed upon.

**Figure 21. Summary of recent developments in the negotiation of arrangements for transboundary water cooperation (2017–2020)<sup>35</sup>**

Recent developments in the negotiation of arrangements (2017–2020)	Basin(s) covered	Comments
2020 Mekong-Lancang Vientiane Declaration between Cambodia, China, Lao, Myanmar, Thailand and Vietnam	Mekong	New arrangement
2020 Convention for the Protection and Peaceful Resolution of Conflicts concerning the Management of Shared Water in Central Africa	Central African region	New arrangement
2019 Memorandum of Understanding between Myanmar and China on Cooperation in Water Resources Management	Ganges-Brahmaputra, Irrawaddy, Mekong, Salween	New arrangement
2019 Agreement between Mozambique and Zimbabwe on the Buzi Watercourse	Buzi	New arrangement
2019 Agreement between Romania and Serbia on Cooperation in Sustainable Management of all Transboundary Waters	Danube	New arrangement in force 1 September 2020
2019 Agreement between North Macedonia and Bulgaria in the Field of Environment and Waters	Danube, Struma	New arrangement
2019 Convention between Hungary and Serbia on Cooperation in the Field of Sustainable Water Management in Transboundary Waters and River Basins of Common Interest	Danube	New arrangement in force 24 April 2020
2018 Agreement between Uzbekistan and Tajikistan on Cooperation to Ensure the Functioning of the Farkhad Dam	Aral Sea	New arrangement
2018 Framework Agreement between Albania and Montenegro on Mutual Relations in Transboundary Water Resources Management	Danube, Drin	New arrangement
2017 Multi-Country Cooperation Mechanism (MCCM) for the joint governance and management of the Stampriet Transboundary Aquifer System (STAS) (Botswana, South Africa, Namibia)	Stampriet Transboundary Aquifer System (STAS)	Within Orange-Senqu River Commission's Ground Water Hydrology Committee
2017 Agreement between Turkmenistan and Uzbekistan on Cooperation on Water Management Issues	Aral Sea	New arrangement
2017 Agreement between Kyrgyz Republic and Uzbekistan on the Interstate use of the Orto-Tokoy (Kasansay) Reservoir	Aral Sea	New arrangement
2017 Implementation Agreement between Indonesia and Timor-Leste on Management of Transboundary Watersheds	Loes	New arrangement
2016 Agreement between Kazakhstan and Russia on the Ural River	Ural	Entered into force 3 August 2017
2012 Dniester Treaty between Moldova and Ukraine	Dniester	Entered into force 28 July 2017
2010 Guarani Aquifer Agreement	Guarani Aquifer	Entered into force 26 November 2020

<sup>35</sup> The table includes all "agreements and other arrangements", as defined in the SDG indicator 6.5.2 step-by-step methodology (UN-Water, 2020b) and listed in the 2020 national reports.

The working group is an example of transboundary water cooperation developing dynamically following a strong political message from the top on the need to strengthen mechanisms in support of economic development and investments. It also demonstrates complementarity of efforts to develop bilateral cooperation in addition to the multilateral cooperation mechanisms in the Aral Sea Basin and demonstrates the usefulness of global legal frameworks for transboundary cooperation, such as the 1992 Water Convention, which both countries have ratified.

### **Adopting an agreement between Mozambique and Zimbabwe for the Buzi River Basin**

Mozambique and Zimbabwe signed an Agreement on Cooperation on the Development, Management and Sustainable Utilization of the Water Resources of the Buzi Watercourse on 29 July 2019. The agreement reflects strongly the key provisions found in the 2000 Revised Southern African Development Community Protocol on Shared Watercourses and the two global water conventions. The parties commit to key substantive principles, such as equitable and reasonable utilization; sustainable utilization; protection, preservation and conservation of the environment; and the prevention and mitigation of significant harm. The agreement also covers issues such as gender mainstreaming, data exchange, accidental pollution, emergency situations, basin transfers and capacity-building.

A number of factors contributed to the successful negotiation and adoption of the Buzi Agreement, including:

- A strong regional and bilateral legal and institutional enabling environment for transboundary waters provided an

important platform. At the bilateral level, the countries had already established a Joint Water Commission in 2002. At the regional level, the countries benefited from being members of SADC, and most notably the 2000 Revised Southern African Development Community Protocol, as well as committing to SADC's Regional Strategic Action Plan. This action plan's priorities included facilitating and coordinating processes that would lead to the establishment of watercourse commissions (Southern African Development Community, 2016).

- Capacity-building, through the implementation of the aforementioned initiatives and partners, was critical to the successful development and adoption of the Buzi Agreement (Kileshye Onema and others, 2020). International water law and environmental flows were key areas for capacity-building within the Buzi River Basin context (Kileshye Onema and others, 2020).
- Financial and technical support from partners such as Global Water Partnership Southern Africa, the Swedish International Cooperation Agency, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Transboundary Water Management Programme in SADC, and the International Union for Conservation of Nature (IUCN) Bridge project.

### **Establishing a Multi-Country Cooperation Mechanism for the Stampriet Transboundary Aquifer System (STAS MCCM)<sup>36</sup>**

To follow up on the United Nations Educational, Scientific and Cultural Organization's Intergovernmental Hydrological Programme's (UNESCO IHP) assessment of the governance

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<sup>36</sup> Based on <https://www.internationalwaterlaw.org/blog/2019/12/09/botswana-namibia-and-south-africa-develop-joint-governance-mechanism-for-the-stampriet-aquifer-system-in-the-orange-senqu-river-commission/>. Accessed on 8 April 2021.



of the Stampriet Aquifer (UNESCO IHP, 2016b) on 17–18 May 2017, delegations from Botswana, Namibia and South Africa attended the 3rd meeting of the Orange-Senqu River Commission’s (ORASECOM) Ground Water Hydrology Committee (GWHC) and Technical Task Team (TTT), where they tabled a proposal to establish the STAS MCCM within the ORASECOM structure.

During the 34th ordinary meeting of the ORASECOM Council, held 17–18 August 2017 in Windhoek, Namibia, the council resolved that the STAS MCCM “be nested/housed” within the ORASECOM GWHC. The ordinary meeting of the ORASECOM Forum of the Parties (ministers responsible for water) subsequently endorsed the council resolution at a meeting held on 16 November 2017 in Kasane, Botswana. The long-term vision is for the STAS MCCM to move from data collection and exchange to joint strategizing and advising STAS countries on the management of the aquifer and its resources, in order to attain sustainability.

The establishment of the STAS MCCM offers a number of important insights:

- Nesting the MCCM formally within a river basin organization facilitates IWRM application, including the combined management of groundwater and surface water.
- ORASECOM will be responsible for the implementation of, and reporting on, activities related to the STAS, as STAS-related activities are now built into ORASECOM’s 10-year IWRM Plan (2015–2024).
- The institutional architecture of ORASECOM, structured into a Forum of the Parties, a Council, a Secretariat, four Standing Task Teams, and committees operating

under the latter (among these, the GWHC operating under the standing TTT), also helped as the proposal initiated by the GWHC could quickly (in less than one year) and seamlessly work its way up the institutional ladder to the highest decision-making body of the commission.

- The Groundwater Resources Governance in Transboundary Aquifers (GGRETA) project, financed by the Swiss Agency for Development and Cooperation and implemented by UNESCO IHP, supports the STAS MCCM.
- The GGRETA project’s national focal points for i) hydrogeology/model, ii) legal and institutional analysis, and iii) gender in the three countries will assist and report to the GWHC officials on data collection. This will serve as a basis for developing scenarios and project activities.

### **4.3. Making existing non-operational arrangements operational**

#### **4.3.1. Accelerating progress in the coverage of transboundary aquifers**

In many cases, progress towards operationalizing existing arrangements can be accelerated by adopting relatively straightforward steps, such as incorporating groundwater in the activities of river basin commissions. In Southern Africa, for instance, countries such as Botswana, Eswatini, South Africa and Zimbabwe have established groundwater task forces in arrangements developed within a river basin context. See for example the Orange-Senqu and Zambezi Watercourse Commissions. The existence of these task forces ensures the inclusion of

groundwater-related activities on the agenda of the meetings of joint bodies, and ensures accountability and follow-up of decisions. Even where task forces or committees do not exist, a good basis for further cooperation in this area is to place groundwater on the agenda of the meetings of joint bodies.

Another example is the inclusion of groundwater bodies within river basin management plans. The Danube countries, for instance, illustrated in their SDG indicator 6.5.2 reports how the International Commission for the Protection of the Danube's River's Basin Management Plan incorporates groundwater bodies of basin-wide importance. The SDG indicator 6.5.2 methodology accommodates such strategies in relation to transboundary aquifers, which is also in line with the way in which operational arrangements under SDG indicator 6.5.2 tend to incorporate transboundary aquifers. Such actions can accelerate progress on groundwater cooperation globally, and make a strong contribution to advancing SDG indicator 6.5.2. However, in some instances it may be necessary to update older arrangements in order to integrate principles of IWRM and account for both surface water and groundwater.



Iguazu Falls at the border between Argentina and Brazil, © Ondrej Bocek / Unsplash - Creative Commons

**Figure 22. Summary of recent examples of joint or coordinated plans adopted by countries for transboundary water cooperation**

Recent examples of joint or coordinated plans adopted by countries	
Strategic Plan for the Zambezi Watercourse (2018–2040), and associated 2019/20 Work Plan and Budget and the 3-year Rolling Work Plan (2019/20–2022/23).	Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe
The Joint Flood Risk Management Plan for the Sava River Basin adopted at the 8th Meeting of the Parties of the Sava Basin Commission, held in October 2019.	Bosnia and Herzegovina, Croatia, Serbia and Slovenia
In 2020, implementation of the Guarani Aquifer Strategic Action Program entitled Enabling Regional Actions began.	Argentina, Brazil, Paraguay and Uruguay
In 2018, countries of the Lake Chad Basin Commission approved the Regional Strategy for the Stabilization, Recovery and Resilience of the Boko Haram-affected Areas of the Lake Chad Basin Region. In 2019, they adopted the regional strategy for adaptation to climate change in the fields of agriculture, livestock and fisheries.	Algeria, Cameroon, Central African Republic, Chad, Libya, Niger, Nigeria and Sudan
2017 Binational Integrated Management Plan of Water Resources of the Carchi-Guáitara, Mira and Mataje Transboundary Basins	Colombia and Ecuador
In 2017, the Strategic Plan for the Sustainable Development of Transboundary Territory of the Sixaola River Basin was adopted for the period 2017–2021.	Costa Rica and Panama
The Nile Basin Initiative has adopted a 10-year basin-wide strategy running from 2017 until 2027, and a five-year action plan/ strategic plans for the Eastern Nile Technical Regional Office and the Nile Equatorial Lakes Subsidiary Action Program Coordination Unit.	Burundi, Democratic Republic of Congo, Ethiopia, Kenya, Rwanda, Sudan, South Sudan, Tanzania and Uganda
On 25 October 2019, the International Fund for saving the Aral Sea Interstate Commission for Sustainable Development adopted a regional environmental protection plan for sustainable development.	Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan
Through the International Boundary and Water Commission, the US and Mexico adopted minutes in 2017 and 2020 concerning Water Scarcity Contingency Plans in the Colorado River Basin, and mechanisms for future cooperation to improve the predictability and reliability of Rio Grande water deliveries.	United States and Mexico
An Integrated Water Resources Plan for the Cuvelai River Basin was adopted in 2019, covering the period 2020–2024.	Angola and Namibia

### 4.3.2. Developing water management plans

A key requirement for demonstrating operability is that countries establish joint or coordinated water management plans or set joint objectives.<sup>37</sup> This is an important test of operability for SDG indicator 6.5.2 as it demonstrates that countries have moved beyond the adoption of an arrangement, to actually planning and implementing the commitments that it contains. Water management plans also help realize the various benefits of transboundary cooperation across other SDGs. Where they are lacking, the adoption of such plans or objectives also offers an opportunity for countries to reinvigorate arrangements that may not currently satisfy the operability criteria of SDG indicator 6.5.2.

National IWRM plans provide an important precursor to the development of either a coordinated or joint plan at the transboundary basin level. However, as noted in the SDG indicator 6.5.1 monitoring exercise, while some progress has been made since 2017, over 50 per cent of countries report that they do not have basin or aquifer management plans in place, or that their implementation is limited (UNEP, 2021).

The plans that do exist are varied.<sup>38</sup> For example, pursuant to the EU Water Framework Directive and Floods Directive, EU member states have an obligation to develop river basin management plans (RBMPs) and flood risk plans for all their basins, including those shared with other member states. These plans are in accordance with the IWRM approach and therefore

constitute an important driver in support of SDG target 6.5. The second RBMPs, and the first flood risk management plans, under the EU Water Framework Directive run from 2015 until 2021. EU member states are therefore in the process of developing RBMPs and flood risk management plans for the period 2021 to 2027. Within the Danube context, for example, discussions are already under way to explore synergies between future RBMPs and flood risk management plans across the entire basin (International Commission for the Protection of the Danube River, 2020).

The Strategic Action Plan (SAP), an approach suggested by the Global Environment Facility's (GEF) International Waters Programme, can also accelerate progress on transboundary water cooperation. SAPs should identify transboundary concerns that are a priority, and set out sectoral interventions – such as policy changes, programme development, regulatory reform and capacity-building – required to resolve them (GEF IW:Learn, n.d.). A recent example of the adoption of a SAP can be seen in the Drin Basin where, despite COVID-19 restrictions, the riparians (Albania, Greece, Kosovo,<sup>39</sup> Montenegro and North Macedonia) came together for an online signing ceremony to adopt the Drin SAP on 24 April 2020.<sup>40</sup> Similarly, in 2018, the Chu-Talas Water Commission between Kyrgyzstan and Kazakhstan accepted the SAP for the Chu and Talas River Basins, pending higher governmental approval.

As illustrated in Figure 22, there have been numerous other recent examples of countries coming together to commit to further developing their cooperation.

37 See generally pages 33 to 35 in UNECE (2020a).

38 See generally Kazbekov, Tagutanazvo and Lautze (2016).

39 This designation is without prejudice to positions on status, and it is in line with United Nations Security Council Resolution (UNSCR) 1244 (1999) and the International Court of Justice (ICJ) opinion on the Kosovo declaration of independence.

40 See Drin Strategic Action Programme Signing Ceremony, <https://www.youtube.com/watch?v=HQZFotjS1vM>. Accessed on 19 February 2021.



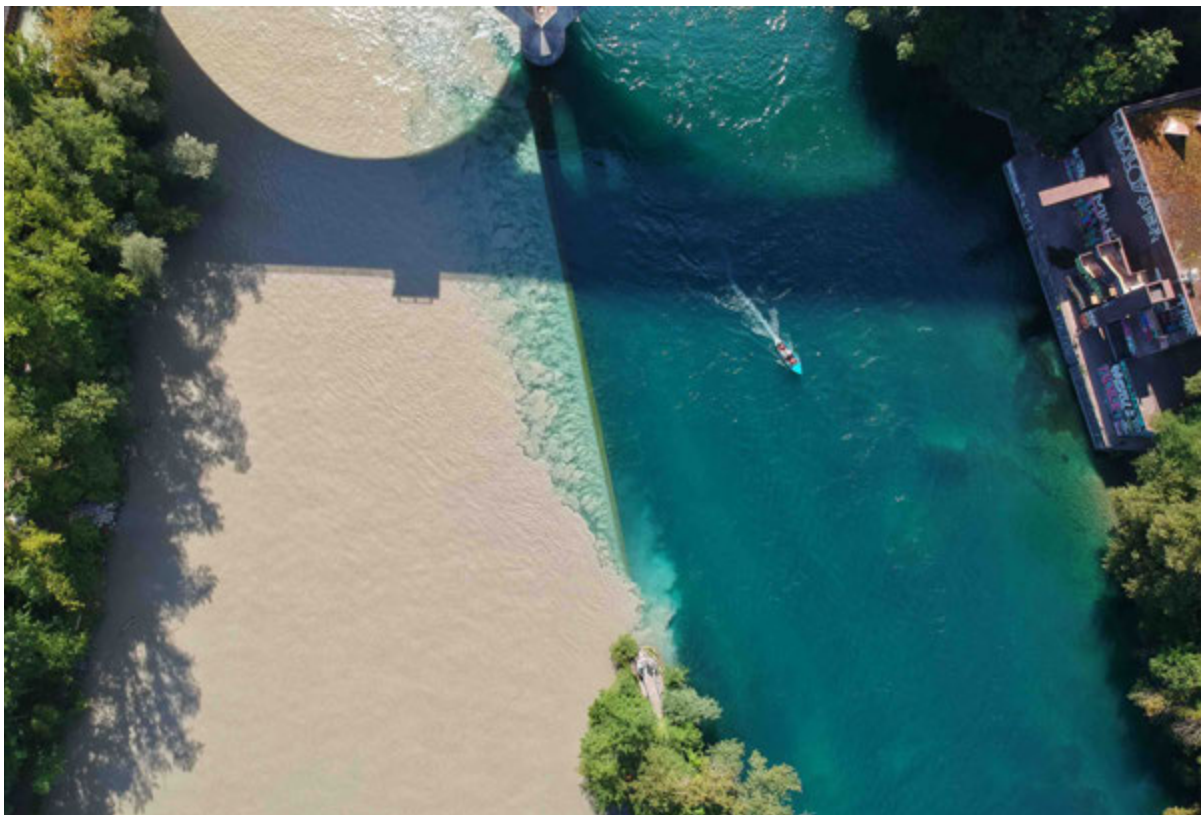
#### 4.4. **SDG indicator 6.5.2 as a trigger to improve the transboundary knowledge base**

##### 4.4.1. **Knowledge is critical to accelerating transboundary water cooperation**

The SDG 6 Global Acceleration Framework recognizes the importance of data availability, generation, validation, standardization and information exchange as means by which to build trust among decision makers (UN-Water, 2020a). Characterizing a hydrological or hydrogeological systems as shared (meaning transboundary interactions are likely) is a prerequisite to cooperation and to the establishment of any arrangement that might further that cooperation. Knowledge

and information are also key to day-to-day cooperation between countries, and for identifying emerging areas that may call for further cooperation, e.g. climate change impacts or newly identified pollution sources. The importance of knowledge and information to transboundary water cooperation justifies the inclusion of regular data- and information-sharing in the operationality criteria for SDG indicator 6.5.2.

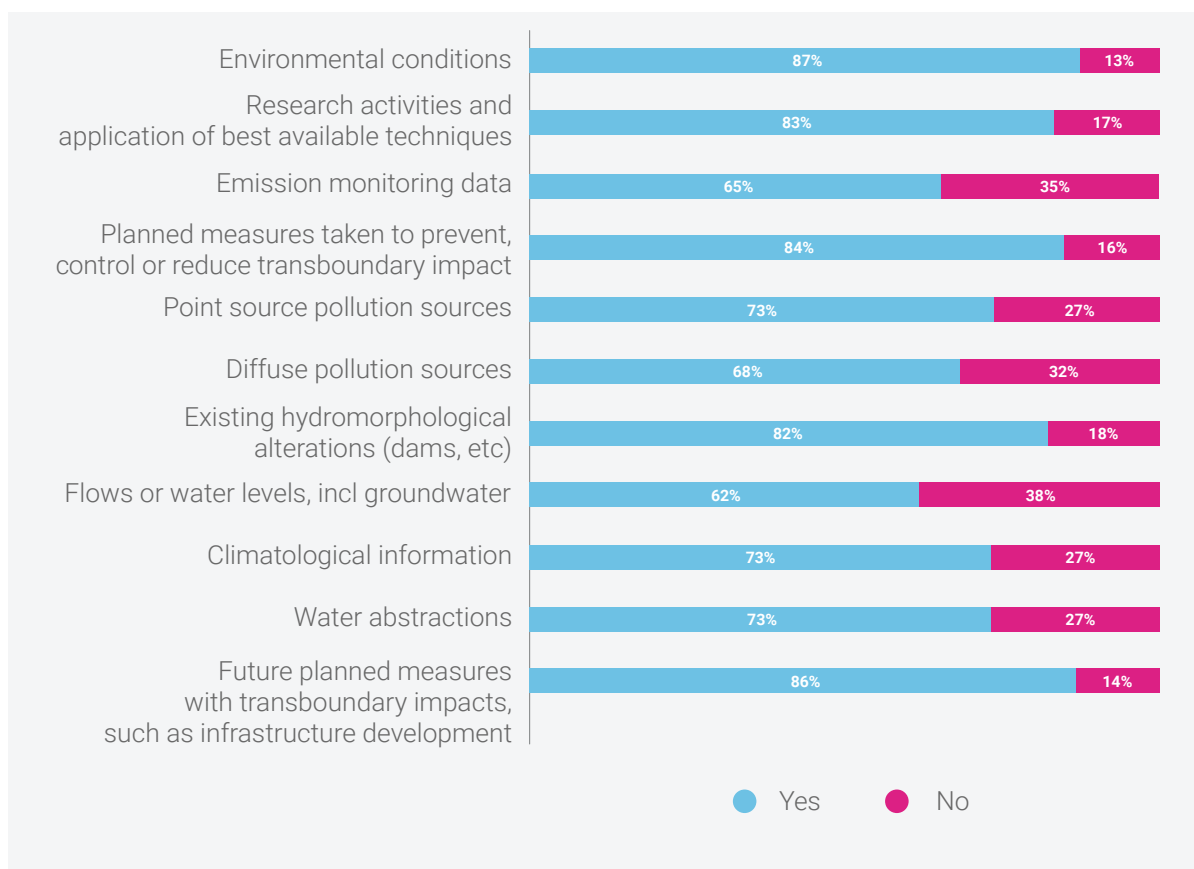
Based on 6.5.2 national reports, Figure 23 shows that countries exchange data on a range of topics. Additionally, Figure 24 highlights a number of challenges that countries face when exchanging data, including data comparability, inadequate resources, the frequency and timing of exchanges, and inadequate data coverage.



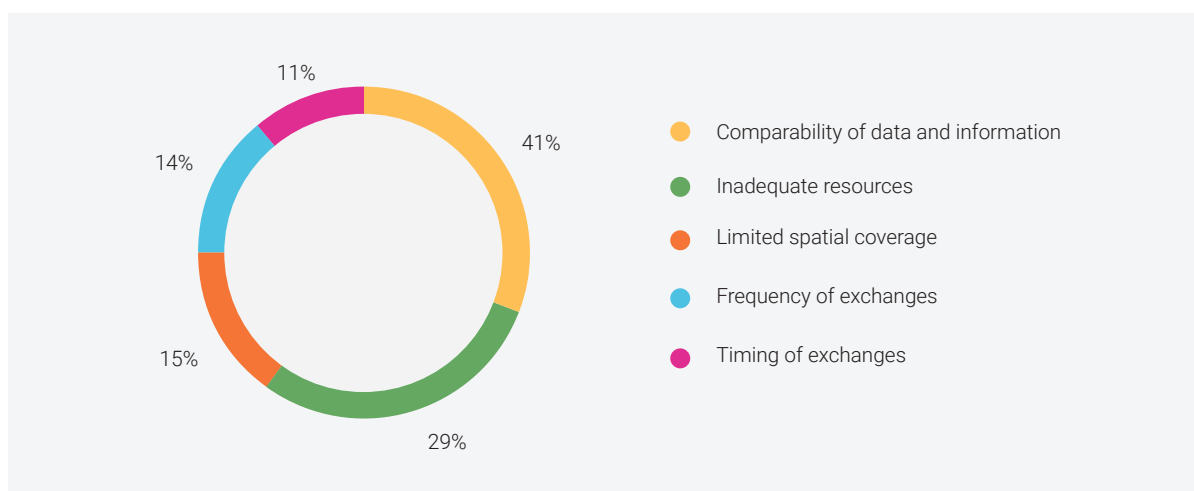
Confluence of the Rhone and Arve Rivers in Geneva, Switzerland, © Jeffrey Blum / Unsplash - Creative Commons



**Figure 23. SDG indicator 6.5.2 reporting template, section II, question 6(d) – [If countries exchange data and information,] on what subjects are information and data exchanged?**



**Figure 24. SDG indicator 6.5.2 reporting template, section II, question 6(g) – What are the main difficulties and challenges to data exchange?**



While potential upstream–downstream impacts of surface water may sometimes be complex to discern, its transboundary nature is easier to assess than transboundary aquifers.<sup>41</sup> In the case of groundwater and transboundary aquifers, questions such as whether an aquifer is transboundary in nature require a minimum level of common understanding of delineation and demarcation criteria and possible transboundary impacts.

#### **4.4.2. Contribution of SDG indicator 6.5.2 to advancing the knowledge base**

While the 6.5.2 monitoring exercise has revealed deficiencies in the knowledge base related to transboundary water cooperation, and transboundary aquifers in particular, it also serves as a catalyst to bridge gaps in data- and information-sharing within national and transboundary institutions (see Box 4). This process can quickly identify priority areas in need of acceleration and highlight any capacity-building and technical development needs. Results from SDG indicator 6.5.1 also highlight the challenges and importance of systems for data-sharing at the national level which, once strengthened, can be a catalyst for data exchange at the transboundary level (UNEP, 2021).

The different rounds of the 6.5.2 monitoring exercise provided an opportunity for countries to reflect on the status of their knowledge and any data gaps. Albania, for example, presented a significantly more detailed update on both river and lake basins and aquifers in its second national report.

The transboundary focus of SDG indicator 6.5.2 is one of its strengths, making it one of the only

SDG indicators for which a discussion between neighbouring countries directly strengthens the process. Countries have, for instance, used joint bodies (including their secretariats) to share SDG indicator 6.5.2 data, such as in the case of the International Commission for the Protection of the Danube River (ICPDR), the Permanent Okavango River Basin Water Commission, the Limpopo Watercourse Commission, the Zambezi Watercourse Commission, the Finnish-Swedish Transboundary River Commission, the Rhine Commission, the Meuse Commission, and the Spanish-Portuguese Commission for the Application and Development of the Albufeira Convention. Other countries, such as Costa Rica, El Salvador, Nicaragua and Panama, held bilateral consultations on SDG indicator 6.5.2 prior to submitting their national reports. In some instances, such as the case of the Rhine, this coordination means that section II of the national report includes the same responses from different countries, except for a few responses where countries mention specific national experiences or perspectives. However, consultation through joint bodies did not change the nature of the reporting process, which is ultimately at the national level rather than through joint bodies.

A series of additional SDG indicator 6.5.2 related actions can improve the knowledge base. For instance, the process of developing an SDG indicator 6.5.2 national report can identify situations where already-collected data are not shared widely at the national level. Even if a focal person or a dedicated team coordinates SDG indicator 6.5.2 reporting, the exercise should include as many actors as appropriate. For example, the SDG indicator 6.5.2 monitoring exercise has revealed that in several cases, national geological surveys have characterized

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<sup>41</sup> Although disputes do occur from time to time. See for example, International Court of Justice (2019). *Dispute over the Status and Use of the Waters of the Silala (Chile v. Bolivia)*. Available at <https://www.icj-cij.org/en/case/162>. Accessed 4 March 2021.

aquifers that have a potential transboundary aspect but data compiled at the field level need more recognition at the political level.

However, a number of countries also reported that they had consulted and coordinated with their geological surveys, e.g. Albania, Lithuania and Slovakia. Togo reported having engaged with the Geology Department of the University of Lomé, and Poland mentioned having consulted with, among others, the National Geological Institute and Institute of Meteorology and Water Management. In other cases, technical cooperation between geological institutes of neighbouring countries has taken place, especially in the framework of international (research) programmes.

However, countries may not report these experiences in the framework of 6.5.2. This is the case, for instance, for the Upper Pannonian Thermal Aquifer shared between Austria, Hungary, Slovakia and Slovenia.<sup>42</sup> Several reasons may explain a reluctance to report such findings in the 6.5.2 national reports, such as countries' willingness to base their reporting on fully acknowledged data in previously published reports (such as river basin management plans) or a concern that including aquifers in the 6.5.2 national report may constitute an official recognition of the transboundary nature of an aquifer. The 2016 Cooperation Agreement between the Lithuanian Geological Survey under the Ministry of the Environment and the Latvian Environment, Geology and Meteorology Centre on cross-border monitoring is an example of

overcoming these challenges in harmonizing approaches to the delineation and assessment of aquifers.

#### **Box 4. SDG indicator 6.5.2 as a trigger for transboundary water cooperation**

While country data inform the final indicator value, which in turn identifies gaps requiring follow-up actions, SDG indicator 6.5.2 is unique among SDG indicators insofar as the process of reporting itself also allows countries to improve transboundary cooperation.

For instance, improving “data gathering” (e.g. better characterization of a transboundary aquifer) is a significant first step towards enabling cooperation and triggering immediate action to address gaps. Often, it is the same experts dealing with SDG indicator 6.5.2 monitoring who also implement cooperation in many countries. These experts can already take action based on the gaps identified and interactions taking place during monitoring.

In the case of Panama, for example, the process and SDG indicator 6.5.2 supporting activities allowed further exchanges of information at the technical level between Panama and Colombia concerning the Rio Jurado River Basin. Sweden and Norway have also undertaken steps to further improve their transboundary water cooperation following the first reporting exercise in 2017. Meanwhile, the first SDG indicator 6.5.2 monitoring exercise had a clear role in establishing current activities regarding cooperation on the Senegalo-Mauritanian Aquifer.

<sup>42</sup> See Szocs, T. and others (2018). Exchanges between co-custodian agencies and at least one of the countries sharing a transboundary aquifer during the 6.5.2 process showed that, during bilateral commission meetings, groundwater experts recognized significant differences between different national methodologies for delineating groundwater bodies. This could constitute an obstacle to reporting on aquifers in the 6.5.2 report.

**Figure 25. SDG indicator 6.5.2 reporting template, section IV, question 3 – Responses to the question regarding type of institutions consulted to prepare the report**

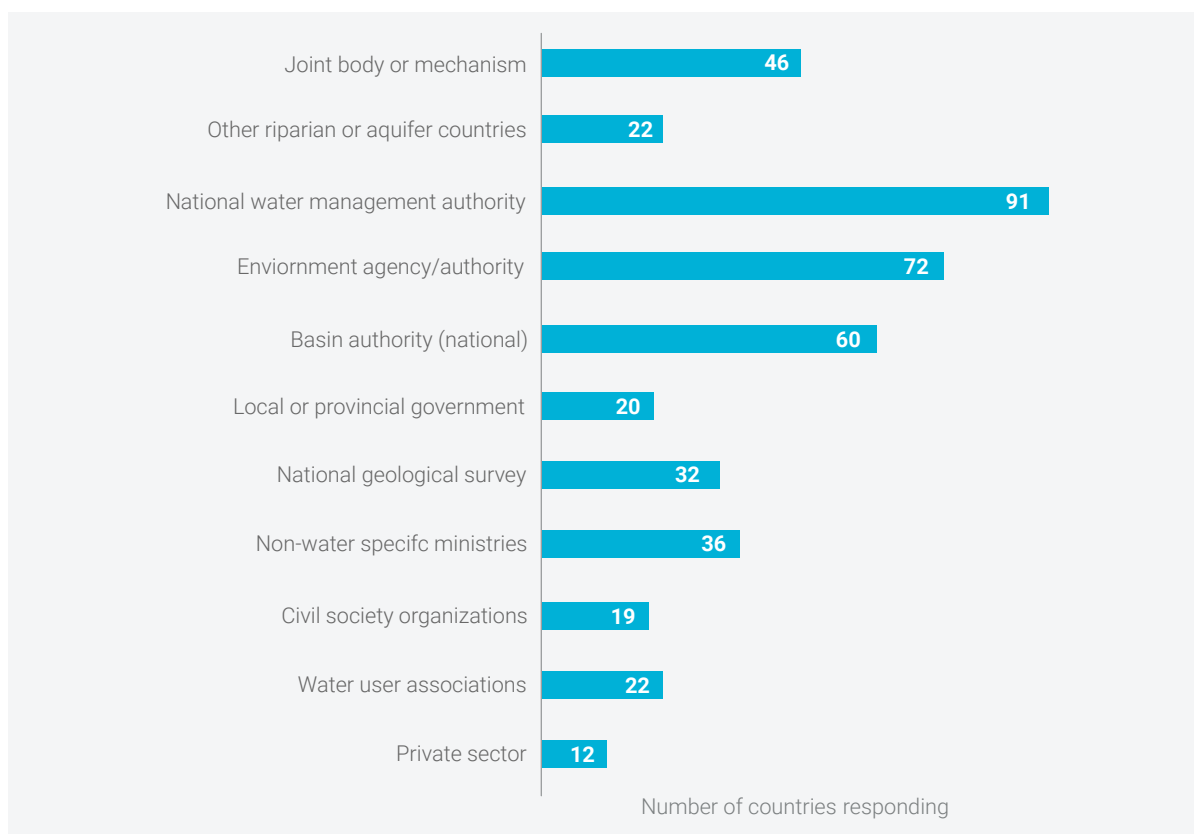


Figure 25 provides an overview of the types of institutions engaged in the second reporting exercise, which has proven to be an important opportunity to raise issues that “traditional actors” at the diplomatic level, or even within the water sector, are not necessarily aware of.

#### 4.4.3. Overcoming SDG indicator 6.5.2 data challenges

To overcome part of the challenge related to uncertainty and benefit from the dynamics of the 6.5.2 monitoring process, there is some flexibility when calculating the indicator, such as the possibility of using only a broad estimation of the area, or even considering only the areas of possible transboundary influence of an aquifer (see Box 5). This latter approach formed the basis for the Al-Sag / Al-Disi Aquifer Agreement

between Jordan and Saudi Arabia.<sup>43</sup> There is therefore a new trend that focuses on areas of transboundary influence, hotspots and priority areas for cooperation (see also Box 6) (Sanchez, Rodriguez, and Tortajada, 2018). Other types of indicators may be required to account for emerging trends focused on a groundwater system’s sustainability, the identification of priority areas, consideration of the joint use of groundwater and surface water, and ecosystem dependence on groundwater resources.

Coordinating SDG indicator 6.5.2 monitoring with the national monitoring of all SDG 6 indicators, and particularly SDG indicator 6.5.1, can also improve the knowledge base. The specificity of SDG indicator 6.5.2 can help demonstrate the contribution of transboundary cooperation within the overall framework of the SDGs.

<sup>43</sup> See [https://www.internationalwaterlaw.org/documents/regionaldocs/Disi\\_Aquifer\\_Agreement-English2015.pdf](https://www.internationalwaterlaw.org/documents/regionaldocs/Disi_Aquifer_Agreement-English2015.pdf).

A number of countries noted this integration of national monitoring processes (often involving national statistics divisions), whereby monitoring of 6.5.2 was clearly part of the national framework put in place for SDG 6 in general, with regular meetings of all focal points for the different indicators. Many countries, such as

Cambodia, Cameroon and Lao PDR, also have a single focal point or team for monitoring 6.5.1 and 6.5.2. The Integrated Monitoring Initiative for SDG 6 project promotes this type of integration, which considers the appointment of a focal point for SDG 6 valuable to ensuring coordination throughout monitoring periods.<sup>44</sup>

### Box 5. Flexibility when considering transboundary aquifers' surface areas

One of the key outcomes of the SDG indicator 6.5.2 monitoring exercise is to ensure that countries take better account of the importance of aquifers for water security. However, the delimitation of an aquifer requires large amounts of data. There is therefore flexibility embedded in the SDG indicator 6.5.2 methodology to allow countries to provide only initial information on their aquifers, and to obtain an overall SDG indicator 6.5.2 value in the absence of undertaking extensive data gathering.

For instance, when a country reports a level of 100 per cent or 0 per cent for both components, i.e. river and lake basins, and aquifers, it is possible to provide an overall indicator value without having to stipulate the surface area of an aquifer. This is possible because the indicator will remain 100 per cent or 0 per cent irrespective of the surface area of an aquifer. In other cases, in recognition of the difficulties that countries face in providing extensive and detailed data on their transboundary aquifers, countries can simply provide an estimated surface area.

### Box 6. Level of detail when mapping transboundary aquifers

Beyond delimitation (see Box 5), the very identification of an aquifer as “transboundary” can prove challenging. Some countries report not having a transboundary aquifer, which the custodian agencies accepted if the (hydro-)geological conditions were consistent with those presented by the World-wide Hydrogeological Mapping and Assessment Programme (WHYMAP), coordinated by UNESCO IHP (see [https://www.whymap.org/whymap/EN/Home/whymap\\_node.html](https://www.whymap.org/whymap/EN/Home/whymap_node.html)), and other sources.

However, the monitoring exercise is also an opportunity to provide greater detail, particularly on small-scale transboundary aquifers. For instance, information sources at the global or regional levels, such as the International Groundwater Resources Assessment Centre (IGRAC)'s Internationally Shared Aquifer Resources Management (ISARM) map (<https://ggis.un-igrac.org>), which the custodian agencies proposed to countries as a reference, may not distinguish smaller aquifer systems that may be important for local transboundary management purposes.<sup>1</sup>

Another output of the 6.5.2 monitoring exercise has been the identification of transboundary aquifers not previously included in the global databases, despite information being available at the national level. In some of these cases, such as Sweden, the monitoring process provided the incentive for detailed delineation.

*1 See for example recent studies, such as Sanchez, Rodriguez, Tortajada (2018) and Fraser, C.M. and others (2020).*

<sup>44</sup> See <https://www.sdg6monitoring.org/about/integrated-monitoring-initiative/#approach>. Accessed on 13 April 2021.



## 4.5. Additional factors supporting the acceleration of transboundary water cooperation

### 4.5.1. Financing the development of operational arrangements for transboundary water cooperation

Financing is one of the five accelerators of the SDG 6 Global Acceleration Framework that is particularly pertinent to transboundary water cooperation. This often overlooked but critical factor in advancing transboundary water cooperation is crucial in supporting the negotiation and implementation of operational arrangements.

There are several challenges in this area, including the perception that such activities are too risky (especially in the absence of a legal and institutional arrangement), the financial capacity constraints facing many countries, the fact that most private financing goes to large national-scale infrastructure projects, and the lack of sufficient consideration and/or undervaluation of the benefits of cooperation (UNECE, 2020b). Results of the second SDG indicator 6.5.1 monitoring exercise attest to the shortfall in funding: more than half of all countries report providing less than 50 per cent of agreed funds for transboundary water cooperation (UNEP, 2021).

Where arrangements and joint bodies for transboundary water cooperation are operational, it is critical that countries are able to sustain both the core costs of any joint body (such as the costs of meetings, staff costs, and buildings), as well as any programme or project costs (such as the costs of monitoring, strategic planning, and/or the development and implementation of joint infrastructure projects). It is also essential that sufficient funding is

available in order to initiate and support the negotiation and adoption of new arrangements for transboundary water cooperation and basin organizations.



Neak Poun, Krong Siem Reap, Cambodia,  
© Ben Tatlow / Unsplash - Creative Commons

Such costs include those related to capacity development, studies and assessments, trust-building, technical and diplomatic exchanges, and the facilitation of negotiation rounds.

As noted in the next section, a growing number of institutions and initiatives can offer both financial and technical assistance to support the development of operational arrangements for transboundary water cooperation.<sup>45</sup> Unfortunately, national Governments and donors are often hesitant to finance processes without clear outcomes and timelines, which is often the perception when negotiating cooperative arrangements. However, such a perspective misses the value of any interim outcomes that the negotiation process can deliver, including developing technical, legal and negotiating skills; addressing past grievances and improving trust; developing a common vision and shared understanding of priority actions; and, as noted previously, strengthening the knowledge base upon which to advance cooperation.

Innovative financing mechanisms that can engage both public and private sectors, such as the Blue Peace Financing Initiative (Blue Peace, 2019) and social impact bonds, and the development of basin investment plans, such as the Sio-Malaba-Malakisi Basin Investment Framework (Kenya and Uganda), are interesting ways to address bottlenecks in financing and raise resources both for transboundary water cooperative processes and activities in shared basins.<sup>46</sup> Additionally, financing of transboundary water cooperation with the tangible benefits produced across a range of SDGs (see Figure 2) – climate change finance, for example – could help diversify funding sources, and ensure greater co-ordination between sectors.

#### **4.5.2. Leveraging and mobilizing expertise and resources to support transboundary water cooperation**

The SDG 6 Global Acceleration Framework stresses the United Nations' convening power to connect available expertise to the country and regional levels. It also recognizes the need to provide better coordination among United Nations entities, and coherent and aligned technical assistance and resources. Additionally, the SDG 6 Global Acceleration Framework emphasizes the need to leverage and scale up innovative practices and technologies, and advocates for the scaling-up of support and action from relevant actors and stakeholders, including in fragile and conflict-affected settings.

Within the transboundary context, a significant number of actors have the ability to support transboundary water cooperation at the global, regional and basin-specific levels and to assist countries in developing their operational arrangements for transboundary water cooperation. At the global and regional levels, several United Nations organizations and other international organizations support the development of operational arrangements. For example, at the global level, the Global Environment Facility (GEF), together with its implementing and executing partners, has supported projects to strengthen transboundary water management across 47 transboundary rivers, 13 transboundary aquifer and 15 transboundary lakes (to the sum of USD 735 million in grant financing, and USD 3.9 billion in co-financing). Development partners – such as the Swiss Agency for Development and Cooperation, the United States Agency for International Development, the Deutsche Gesellschaft für Internationale

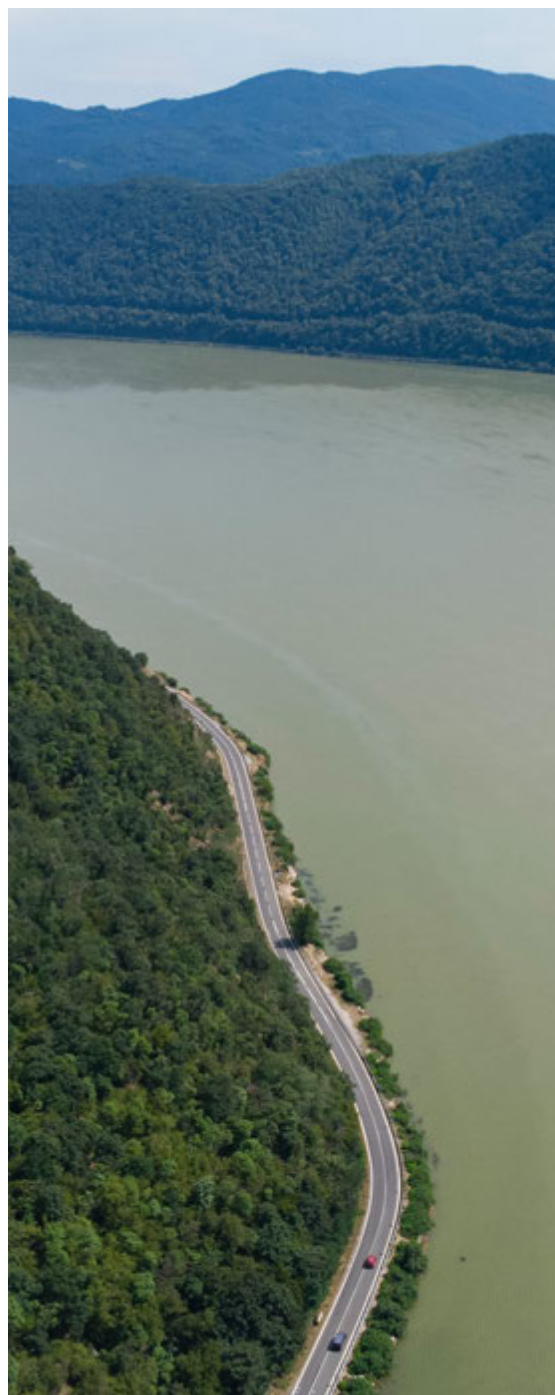
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45 These include international financial institutions, multilateral and regional development banks, regional and bilateral development agencies and United Nations organizations.

46 See [https://unece.org/fileadmin/DAM/env/water/activities/Benefits\\_cooperation/SMM\\_Investment\\_Framework\\_16th\\_Jan\\_2019\\_FINAL.pdf](https://unece.org/fileadmin/DAM/env/water/activities/Benefits_cooperation/SMM_Investment_Framework_16th_Jan_2019_FINAL.pdf).

Zusammenarbeit (GIZ) and the French Development Agency – also play an important role supporting transboundary water cooperation at the global, regional and basin-specific levels.

Technical and financial partners, as well as United Nations organizations and international donors, should promptly respond to countries' requests for help with accelerating the development of operational arrangements for transboundary water cooperation. They should ensure that any support provided is both targeted and effective. In this regard, the SDG indicator 6.5.2 monitoring exercise provides an opportunity to establish a direct dialogue with those countries that have expressed a need for support with establishing governance systems for their transboundary systems. Custodian agencies can play a pivotal role in supporting, aligning and coordinating such action. For example, the 1992 Water Convention hosted by UNECE is supporting countries that have requested assistance with developing operational arrangements. It has prepared a set of recommendations in a *Practical guide on the development of agreements and arrangements for transboundary water cooperation*.<sup>47</sup> Meanwhile, UNESCO supports water education, and capacity development related to groundwater governance.<sup>48</sup>



Danube River, Romania, © Alex Meta / Unsplash - Creative Commons

47 See <https://unece.org/environment-policy/water>. The Water Convention has developed a series of guidance documents to support countries with developing their cooperation arrangements, including the *Principles for Effective Joint Bodies for Transboundary Water Convention*, [https://unece.org/fileadmin/DAM/env/water/publications/WAT\\_Joint\\_Bodies/ECE\\_MP.WAT\\_50\\_Joint\\_bodies\\_2018\\_ENG.pdf](https://unece.org/fileadmin/DAM/env/water/publications/WAT_Joint_Bodies/ECE_MP.WAT_50_Joint_bodies_2018_ENG.pdf) and the *Guide to Implementing the Water Convention*, <https://unece.org/environment-policy/publications/guide-implementing-water-convention>. See also Programme Area 1 of the 2019–2021 Work Programme, of which the objectives include supporting the development of agreements, the establishment of joint bodies, and the strengthening of institutions: see *Water Convention Programme of Work 2019–2021*, [https://unece.org/DAM/env/water/publications/WAT\\_NONE\\_14\\_PoW/UNECE-Transboundary-cooperation-15-19-FINAL-WEB2.pdf](https://unece.org/DAM/env/water/publications/WAT_NONE_14_PoW/UNECE-Transboundary-cooperation-15-19-FINAL-WEB2.pdf).

48 See <https://www.un-igrac.org/special-project/ggreta>.

## Box 7. Gender and negotiating operational arrangements for transboundary water cooperation

The SDG 6 Global Acceleration Framework highlights the need for an inclusive approach to the management of water resources that engages the whole society, including women and young people. Within the transboundary context, men have traditionally dominated negotiations on transboundary waters, and gender mainstreaming remains a major challenge in water resources management. There is therefore a need to address the lack of representation of women in water diplomacy and at high levels of decision-making. Conversely, in the context of peacebuilding and conflict resolution, women's participation at all scales is a proven asset in the development of sustainable agreements.

One initiative seeking to address this imbalance is the Women in Water Diplomacy Network in the Nile. Launched in 2017, and supported by Stockholm International Water Institute (SIWI), this initiative seeks to enhance women's leadership in peace and security processes in the Nile Basin, enhance regional dialogues around the shared waters in the Nile, increase the number of women engaging in high-level basin negotiation processes, and strengthen political dialogues and willingness to cooperate among women water leaders in the Nile Basin states.

For further information, please see:

UNESCO-World Water Assessment Programme (n.d.). WWAP Toolkit on Sex-disaggregated Water Data. <http://www.unesco.org/new/en/natural-sciences/environment/water/wwap/water-and-gender/methodology-indicators-and-toolkit/>. Accessed on 7 April 2021.

Global Water Partnership, UNEP-DHI and Cap-Net (2021). Advancing towards Gender-Sensitive Water Resources Management. Available from [https://www.gwp.org/globalassets/global/about-gwp/publications/gender\\_sdg\\_study\\_forinput.pdf](https://www.gwp.org/globalassets/global/about-gwp/publications/gender_sdg_study_forinput.pdf). Accessed on 8 April 2021.

Krause, J., Krause, W., and Bränfors, P. (2018). Women's participation in peace negotiations and the durability of peace. *International Interactions*, Vol. 44, No.6, 985–1016.

IUCN (2018). Women as Change-Makers in the Governance of Shared Waters. Switzerland. Available at <https://portals.iucn.org/library/sites/library/files/documents/2018-036-En.pdf>. Accessed on 18 February 2021.

SIWI (n.d.). Women in water diplomacy. <https://www.siw.org/what-we-do/women-in-water-diplomacy/>. Accessed on 18 February 2021.



Source of the Sava River in Slovenia, © George Bakos / Unsplash - Creative Commons



### 4.5.3. Capacity development as a foundation for negotiating operational arrangements for transboundary water cooperation

Warning that “gaps in institutional and human capacity ... slows implementation of SDG 6”, the SDG 6 Global Acceleration Framework highlights capacity development as a key “accelerator” (UN-Water, 2020a). The framework observes that “previous output-based approaches have not paid sufficient attention to education, training, attracting and retaining the skilled workforce needed to deliver water and sanitation related services” (UN-Water, 2020a). Within a transboundary context, there is the additional risk that differing levels of capacity among countries negotiating operational arrangements for transboundary water cooperation may create an obstacle to cooperation.

At its 34th session in March 2021, UN-Water established an initiative to support coordinated actions related to the capacity development accelerator of the SDG Global Acceleration Framework.<sup>49</sup> The initiative is coordinated by UNESCO and the United Nations Department of Economic and Social Affairs. Many organizations within and outside the United Nations system (for example UNDP, UNEP, FAO, UNESCO, UNECE, UNESCWA, GWP, IUCN, SIWI) have joined forces within the UN-Water Expert Group on Transboundary Waters to provide capacity-building and other support on transboundary cooperation.

Capacity development must recognize that water cooperation processes are enhanced when they reflect the diverse societies they represent, and where there are opportunities

to hear new ideas and different perspectives. There are also important synergies between capacity development at national and transboundary levels of IWRM. Transboundary water cooperation should therefore be seen as a multitrack process that enables a diverse group of stakeholders – including scientists, water managers, diplomats, technicians, and civil society organizations – to help establish the basis for sustainable transboundary water cooperation. Capacity development, particularly in relation to international water law and diplomacy, should therefore not be confined to the traditional actors that tend to be involved in formal negotiations between countries, but also those involved in complementary informal processes, such as non-governmental organizations and academics, that have the ability to supplement and inform official negotiations.

There is a critical need to ramp up capacity development initiatives in order to both demonstrate and share lessons on the benefits of having operational arrangements in place, and to support countries in their ambitions to negotiate, adopt and implement them. The aforementioned example of the 2019 Buzi Watercourse Agreement (see section 4.2.2), with support from SADC’s WaterNet programme and IUCN’s Bridge project, clearly demonstrates the central role that capacity development can play in the design and negotiation of operational arrangements.

Several institutions and initiatives are already well placed to support and upscale capacity development in relation to such design and negotiation.<sup>50</sup> Examples include training courses prepared by the United Nations Institute for

49 See also [https://www.gwp.org/en/sdg6support/about/the\\_programme/about/](https://www.gwp.org/en/sdg6support/about/the_programme/about/) for information on the SDG 6 IWRM Support Programme, which provides IWRM-specific support to accelerate the implementation of SDG 6 and other water-related goals.

50 See Massive Open Online Course (MOOC) on Governance for Transboundary Freshwater Security, <https://www.gwp.org/en/learn/capacity-building/governance-for-transboundary-freshwater-security--a-massive-open-online-course-mooc/> and the IUCN Building River Dialogue and Governance initiative, <https://www.iucn.org/theme/water/our-work/current-projects/bridge>.



Training and Research (UNITAR) and UNESCO, the Geneva Water Hub, as well as the Massive Open Online Course on Governance for Transboundary Freshwater Security, developed by the Global Water Partnership, GEF IW:Learn and partners, which has attracted approximately 2,000 learners during its initial roll-out.<sup>51</sup> However, more effort is needed to ensure that a wider range of stakeholders can benefit from these initiatives, and that experts have sufficient opportunities available to them to deepen their knowledge and understanding in these areas through professional and postgraduate training.



Amazon River near Manaus, © Nareeta Martin / Unsplash - Creative Commons



Confluence of Zaskar and Indus Rivers in India, © Pawan Khatri / Unsplash - Creative Commons

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51 Promising recent developments in this regard include the newly established International Water Law Academy at Wuhan University, China, <https://iwla.whu.edu.cn>. Other examples include, but are not limited to, IHE Delft's Water Cooperation and Diplomacy Programme, <https://www.un-ihe.org/water-cooperation-and-diplomacy>, and the University of Geneva's Platform for International Water Law, <https://www.unige.ch/droit/eau/en/>. For further examples, please see Universities Partnership for Water Cooperation and Diplomacy, <https://upwcd.org>.

# ● 5. Conclusions and next steps

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## 5.1. Contribution of SDG indicator 6.5.2 to transboundary water cooperation

SDG indicator 6.5.2 continues to make an important contribution to the monitoring of operational arrangements for transboundary water cooperation, which in turn provides a critical evidence-based assessment of the need to accelerate progress to achieve the goal of having IWRM at all levels by 2030.

While during the first SDG indicator 6.5.2 monitoring process some countries demonstrated low levels of engagement in the reporting exercise, the response during the second phase has been encouraging. Despite COVID-19, it has even exceeded expectations: 129 out of the 153 countries sharing transboundary basins submitted responses to the second monitoring exercise – an increase of 30 countries. This was due in part to the continued action taken by the custodian agencies, countries and partners through direct contact, webinars series and trainings, and technical feedback to support countries with calculating the indicator, as well as the growing momentum in support of the SDG framework more generally. It is evident that this new dynamic has resulted in increased interest among countries to progress transboundary

water cooperation. The improved response from countries in Latin America and the Caribbean and Central, Eastern, Southern and South-Eastern Asia has been particularly noticeable. While both the coverage and quality of reporting require further improvement, the growing engagement in the monitoring exercise is encouraging. It will be important to capitalize on this momentum in future monitoring exercises in order to progress transboundary cooperation at an accelerated rate.

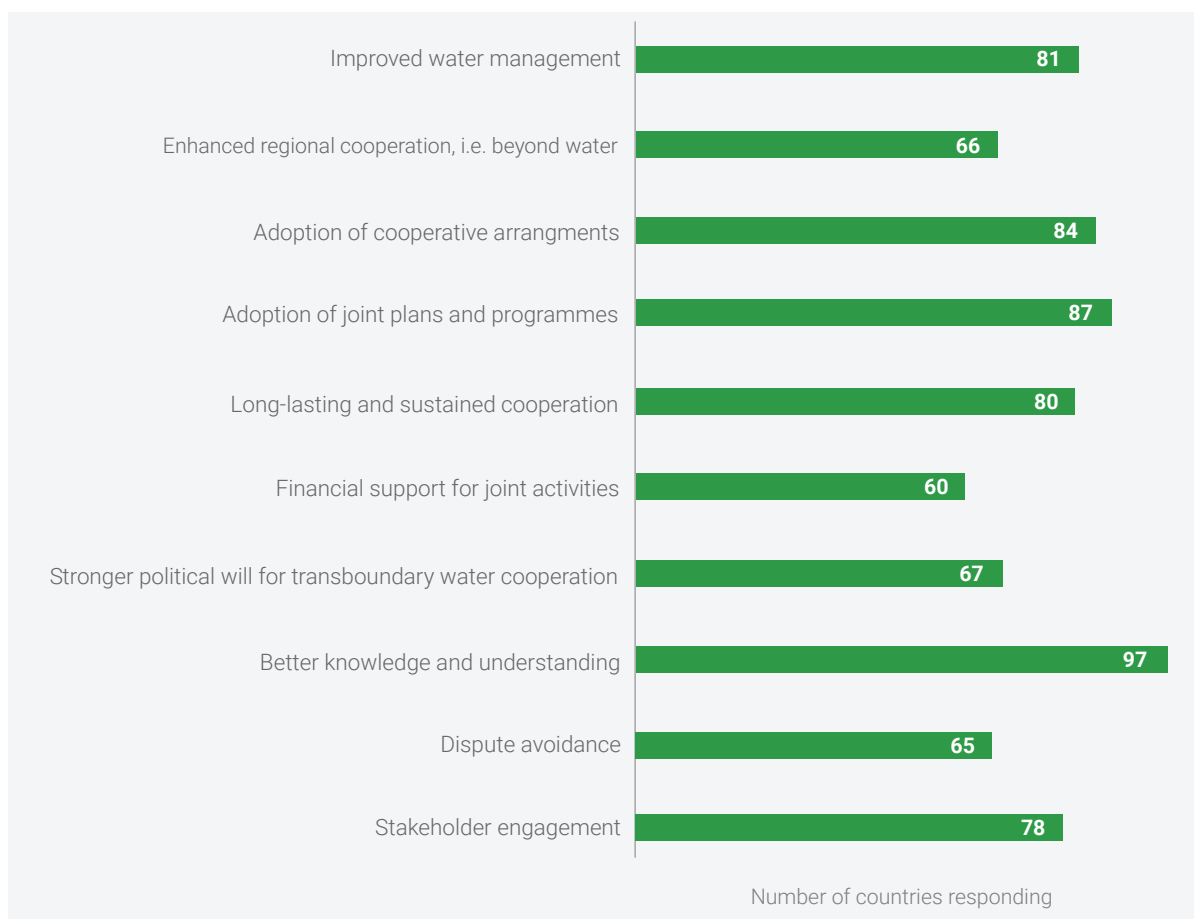
The growth in coverage and quality of national reports means that SDG indicator 6.5.2 processes can play a stronger role in informing decision-making on transboundary water cooperation at multiple levels. At the national level, countries are carefully reviewing their indicator values and national reports in order to benchmark their progress on transboundary water cooperation, identify their needs for capacity development, and ensure further improvements towards 2030. This monitoring process has provided an opportunity to highlight both the achievements and challenges faced in progressing transboundary water cooperation (see Figures 26 and 27). At the basin level, countries have agreed to cooperate on data gathering, such as in the case of the Rio Jurado between Colombia and Panama. The SDG indicator 6.5.2 process proved to be an incentive for neighbouring countries to initiate a dialogue,

such as in the case of the Senegalo-Mauritanian Aquifer, where initial data gathering has led to joint projects.

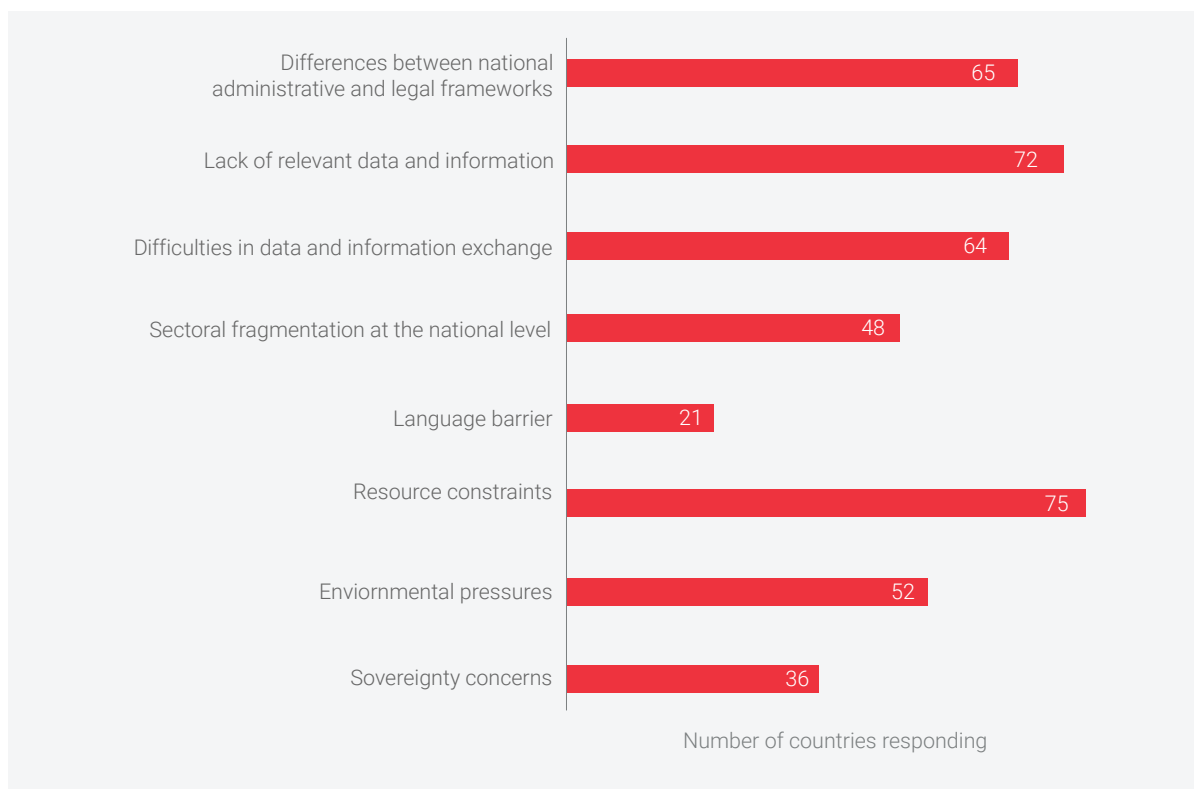
At the regional level, organizations such as the United Nations Economic Commission for Africa, the Conference of Ibero-American Water Directors (CODIA) and the United Nations Economic and Social Commission for Western Asia have used SDG indicator 6.5.2 data to develop regional studies on transboundary water cooperation, which present the findings from the 6.5.2 monitoring exercise at a regional scale, and focus on the regional steps needed to accelerate progress.

At the global level, results from SDG indicator 6.5.2 monitoring continue to feed into the High-Level Political Forum on Sustainable Development and inform the work of the Water Convention. The SDG indicator 6.5.2 monitoring exercise also provides important data and information to the scientific community for transboundary water-related research. Countries and United Nations organizations should consider the results of the second monitoring exercise as valuable inputs in the preparation of the programme of the 2023 United Nations Water Conference, which will help further raise the profile and importance of transboundary water cooperation, including at the political level.

**Figure 26. SDG indicator 6.5.2 reporting template, section IV, question 2 – What have been the main achievements in cooperating on transboundary waters?**



**Figure 27. SDG indicator 6.5.2 reporting template, section IV, question 1 – What are the main challenges your country faces in cooperating on transboundary waters?**

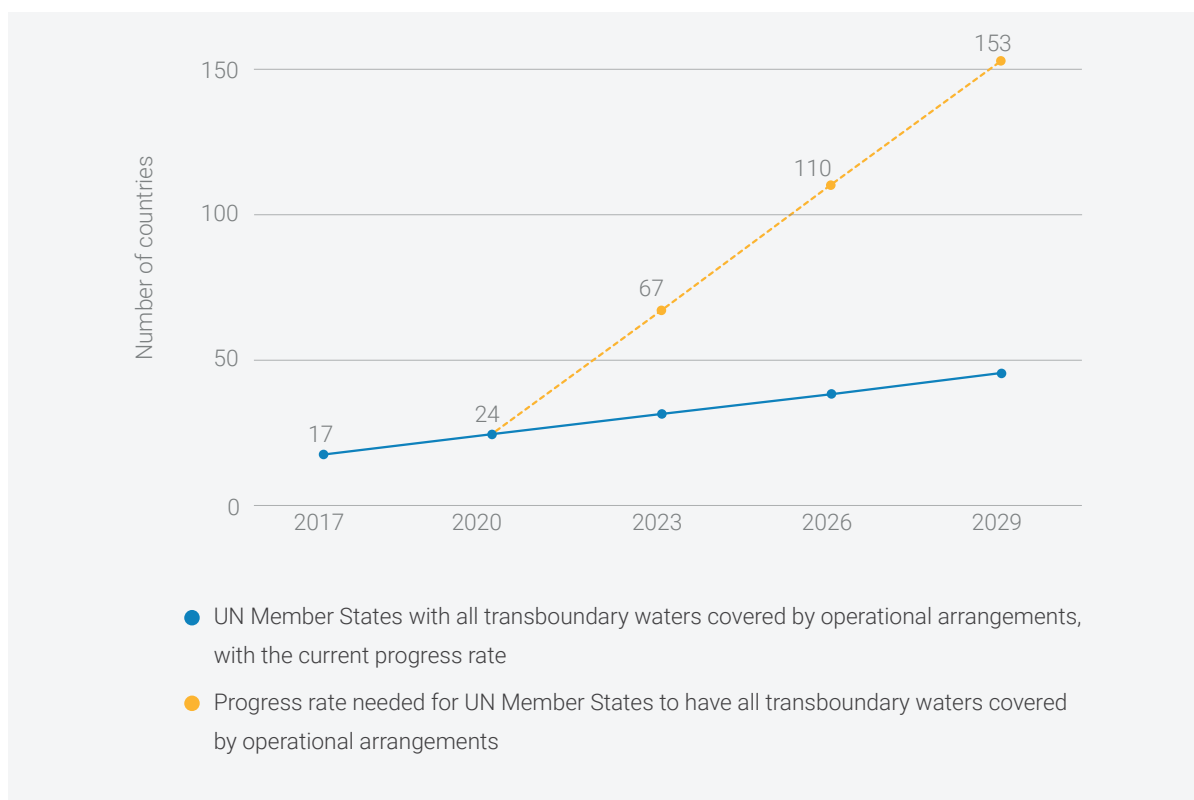


The SDG indicator 6.5.2 monitoring exercise must continue to play a strong role in supporting transboundary water cooperation at multiple levels. It is therefore important that the custodian agencies, together with the global and regional partners listed in this report, continue to support countries in improving their knowledge and enhancing the quality of the submission of their national reports, and in providing information on the status and coverage of current arrangements.

## 5.2. Summary of findings: overall status, data gaps, who is lagging behind, interlinkages

While the second monitoring exercise has witnessed some encouraging developments in terms of country engagement, the results also highlight the gravity of the challenge. Combined data for 2017–2020 show that only 24 countries have operational arrangements covering all their transboundary basin area, and only 46 countries have operational arrangements covering 70 per cent or more of their transboundary basin area.

**Figure 28. Number of countries that have all transboundary waters covered by operational arrangements – current and required rates**



From a regional perspective, North Africa and Western Asia, Latin America and the Caribbean, and Central, Eastern, Southern and South-Eastern Asia have low numbers of countries with operational arrangements for transboundary water cooperation in place. As Figure 28 shows, “business as usual” will therefore not be enough to ensure the remaining 129 countries sharing transboundary waters have all their basins covered by operational arrangements by 2030. Achieving this target will require a major acceleration in effort. Results from SDG indicator 6.5.1 on IWRM show a similar pattern, with the global rate of implementation needing to double to achieve SDG target 6.5 by 2030.

While the first SDG indicator 6.5.2 monitoring exercise provided an opportunity to highlight data gaps related to transboundary aquifers at the national level, progress made since then to improve reporting on countries transboundary aquifers is encouraging. However, challenges remain. Combined data for 2017–2020 still miss 29 countries that did not respond, and there are an additional 22 countries where the indicator value for aquifers is unavailable. Data are therefore still only available for around 60 per cent of the countries that share transboundary aquifers, compared with over 75 per cent of countries for river and lake basins.

### 5.3. Accelerating progress on transboundary water cooperation

Chapter 4 highlighted ways in which to accelerate progress on transboundary water cooperation, such as through the creation of a regional working group (as in the case of the Senegalo-Mauritanian Aquifer) or through the adoption or reinvigoration of arrangements (as in the case of the Syr Darya River Basin (Kazakhstan and Uzbekistan), the Buzi River Basin (Mozambique and Zimbabwe), and the Stampriet Aquifer (Botswana, Namibia and South Africa)). These cases demonstrate that sometimes relatively straightforward steps, such as establishing regular meetings at a technical level, can significantly accelerate progress.

The report has also highlighted the need for such acceleration. In line with the SDG 6 Global Acceleration Framework, focusing efforts on a number of key areas will be critical to achieving that acceleration, namely:

- **Address data gaps** – While the response to SDG indicator 6.5.2 monitoring has been extremely positive, it has also highlighted the need to focus attention on data, particularly in relation to transboundary aquifers and those countries where the SDG indicator value is unavailable.

**Next steps will require countries, custodian agencies and partners to work together to improve both the quality and coverage of data, including by harmonizing data and including SDG indicator 6.5.2 activities in the work of regional and basin organizations. This will enable the third monitoring exercise to provide a comprehensive picture of the basins either covered or not covered by operational arrangements. Financial**

**organizations may also take into account the work done on 6.5.2, lessons learned and gaps identified in their investment decisions.**

- **Upscale capacity development** – As the Buzi Agreement clearly demonstrates, capacity-building is an important precursor to the negotiation and implementation of operational arrangements for transboundary waters cooperation.

**Next steps will require custodian agencies and partners to continue to facilitate and upscale shared learning and exchanges of experience between countries, strengthen the ability to identify and produce new information, mobilize resources and, where needed, establish technical projects.**

- **Build upon and further strengthen legal frameworks, such as the Watercourses Convention, the Water Convention and the Draft Articles on the Law of Transboundary Aquifers** – Where operational arrangements are lacking, these global instruments offer practical support and an important basis upon which to negotiate new arrangements or revise existing ones.

**Next steps will require countries to continue to accede to and use these platforms, including the institutional framework of the Water Convention, to advance their cooperation based on fundamental principles of international law and existing good practices. In addition, the draft articles on the law of transboundary aquifers, which the United Nations General Assembly will reconsider in 2022, can support much-needed progress on groundwater.**

- **Mobilize political will for transboundary water cooperation** – Transboundary water cooperation offers multiple benefits that go beyond water, such as benefits for regional



integration, peace, sustainable development, environmental protection, and energy and cooperation.

**Next steps will require coupling efforts and fostering synergies between these issues to raise the importance of transboundary water cooperation on the political agenda at the national, regional and global levels. Sharing good practice and mainstreaming transboundary water issues into related sectors' actions, policies and programmes is one way of accelerating progress. Additionally, the 2023 United Nations Water Conference offers an opportunity for countries to reinvigorate their commitment to transboundary water cooperation, for instance through the establishment of roadmaps to ensure that operational arrangements cover all their basins by 2030. Making reference to SDG indicator 6.5.2 progress and commitments in the High-Political Forum on Sustainable Development's Voluntary National Reviews can also mainstream and strengthen political commitment to transboundary water cooperation.**

- **Mainstream transboundary cooperation into national IWRM and other related sectoral actions** – As illustrated by SDG indicator 6.5.1 monitoring, progress in implementing IWRM at the national level is a critical basis for advancing cooperation at the transboundary level.

**Next steps will require embedding transboundary cooperation into national laws, strategies and plans as a foundation for bilateral and multilateral negotiations and to strengthen the implementation of existing arrangements.**

- **Tackle existing bottlenecks in financing transboundary water cooperation** – The financing of transboundary water cooperation has traditionally fallen short of needs due to the challenges in securing financing from traditional sources, a lack of capacity and political will, and structural barriers in financing.

**Next steps will require the continued development of innovative financing mechanisms, such as the Blue Peace Fund, and improved articulation and recognition of the benefits of investing in the negotiation of arrangements for transboundary water cooperation, as well as in the establishment and sustainable operation of joint bodies.**

- **Leveraging and mobilizing expertise** – There is a need to upscale and coordinate the activities of United Nations organizations and other international organizations, such as the GEF-International Waters, the Programme of Work under the Water Convention, and UNESCO's Internationally Shared Aquifer Resources Management (ISARM) initiative, to provide targeted support to countries in the negotiation, adoption and implementation of arrangements for transboundary water cooperation.

**Next steps will require custodian agencies and partners to coordinate efforts in order to address data gaps and promptly respond to country requests for support with progressing transboundary water cooperation.**

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# Annexes

## Annex I. Country breakdown of SDG 6.5.2 indicator value, river and lake basin value, and aquifer value

Country name	Rivers & lakes component (%)	Aquifers component (%)	SDG indicator 6.5.2 (%)
Afghanistan	51.66	*NaN	NaN
Albania	56.01	51.67	54.49
Algeria	0.00	58.32	57.54
Andorra	4.38	**N	4.38
Angola	100.00	15.24	78.84
Argentina	99.57	0.00	60.41
Armenia	12.41	0.00	11.34
Austria	100.00	100.00	100.00
Azerbaijan	27.75	3.86	21.73
Belarus	67.43	67.43	67.43
Belgium	100.00	100.00	100.00
Benin	98.30	58.47	83.33
Bosnia and Herzegovina	96.14	73.32	92.60
Botswana	100.00	100.00	100.00
Brazil	99.76	0.00	61.82
Brunei Darussalam	0.00	0.00	0.00
Bulgaria	100.00	97.59	99.55
Burkina Faso	93.57	NaN	NaN
Burundi	92.03	79.39	88.34
Cambodia	100.00	0.00	56.00
Cameroon	87.20	92.55	88.25
Canada	91.27	0.00	80.22
Chad	35.85	53.18	44.42
Chile	87.21	0.00	87.21
Colombia	1.08	NaN	NaN



Country name	Rivers & lakes component (%)	Aquifers component (%)	SDG indicator 6.5.2 (%)
Costa Rica	9.04	0.00	9.00
Côte d'Ivoire	18.04	NaN	NaN
Croatia	100.00	100.00	100.00
Czech Republic	100.00	100.00	100.00
Democratic Republic of the Congo	99.61	NaN	NaN
Denmark	100.00	N	100.00
Dominican Republic	0.00	0.00	0.00
Ecuador	100.00	100.00	100.00
Egypt	100.00	NaN	NaN
El Salvador	0.00	0.64	0.07
Equatorial Guinea	0.00	N	0.00
Estonia	100.00	100.00	100.00
Eswatini	100.00	0.00	91.91
Ethiopia	49.51	NaN	NaN
Finland	100.00	N	100.00
France	56.54	N	56.54
Gabon	0.00	0.00	0.00
Gambia	90.65	0.00	46.86
Georgia	0.00	0.00	0.00
Germany	100.00	100.00	100.00
Ghana	88.36	95.68	91.05
Greece	58.14	1.03	32.76
Guinea	66.78	NaN	NaN
Guinea-Bissau	100.00	0.00	42.86
Guyana	8.35	0.00	5.94
Honduras	0.00	0.00	0.00
Hungary	100.00	100.00	100.00
Indonesia	89.93	0.00	1.22
Iraq	15.04	0.00	10.61
Ireland	100.00	100.00	100.00
Italy	100.00	100.00	100.00
Jordan	61.69	14.92	23.23
Kazakhstan	100.00	0.00	63.22

Country name	Rivers & lakes component (%)	Aquifers component (%)	SDG indicator 6.5.2 (%)
Kenya	35.91	0.00	26.75
Kuwait	N	NaN	NaN
Kyrgyzstan	29.91	0.00	27.20
Lao People's Democratic Republic	92.92	NaN	NaN
Latvia	100.00	94.52	97.29
Lebanon	76.42	NaN	NaN
Lesotho	100.00	0.00	50.00
Libya	N	97.96	97.96
Liechtenstein	100.00	100.00	100.00
Lithuania	25.69	50.17	34.06
Luxembourg	100.00	100.00	100.00
Malawi	93.14	4.45	61.40
Malaysia	13.22	0.00	1.73
Mali	99.91	60.67	75.35
Mexico	49.65	21.67	38.57
Mongolia	100.00	100.00	100.00
Montenegro	84.80	20.19	66.68
Morocco	0.00	0.00	0.00
Myanmar	24.78	0.00	20.02
Namibia	100.00	100.00	100.00
Netherlands	100.00	100.00	100.00
Nicaragua	0.00	NaN	NaN
Niger	89.39	81.23	85.66
Nigeria	100.00	NaN	NaN
North Macedonia	13.24	12.22	12.94
Norway	89.46	88.31	89.45
Oman	N	NaN	NaN
Panama	9.31	0.00	9.13
Paraguay	100.00	0.00	50.86
Peru	14.11	NaN	NaN
Poland	48.08	100.00	55.68
Portugal	100.00	N	100.00
Qatar	N	0.00	0.00

Country name	Rivers & lakes component (%)	Aquifers component (%)	SDG indicator 6.5.2 (%)
Republic of Korea	0.00	0.00	0.00
Republic of Moldova	100.00	100.00	100.00
Romania	100.00	100.00	100.00
Rwanda	100.00	0.00	47.90
Senegal	100.00	0.00	35.21
Serbia	92.51	73.73	89.65
Sierra Leone	7.02	N	7.02
Slovakia	100.00	21.94	80.92
Slovenia	100.00	100.00	100.00
Somalia	0.00	0.00	0.00
South Africa	100.00	45.12	94.91
Spain	100.00	N	100.00
Suriname	0.00	0.00	0.00
Sweden	100.00	100.00	100.00
Switzerland	93.50	74.11	90.23
Thailand	100.00	NaN	NaN
Togo	55.63	76.02	60.17
Tunisia	0.00	100.00	80.47
Turkmenistan	66.02	NaN	NaN
Uganda	98.47	0.00	84.93
Ukraine	57.41	100.00	60.59
United Arab Emirates	0.00	0.00	0.00
United Kingdom of Great Britain and Northern Ireland	0.00	0.00	0.00
Uzbekistan	100.00	0.00	69.59
Venezuela (Bolivarian Republic of)	6.96	0.00	3.51
Viet Nam	30.46	0.00	NaN
Zambia	76.79	0.00	70.03
Zimbabwe	72.76	43.73	69.90

*Note: \*NaN: indicates that the indicator value is not available.*

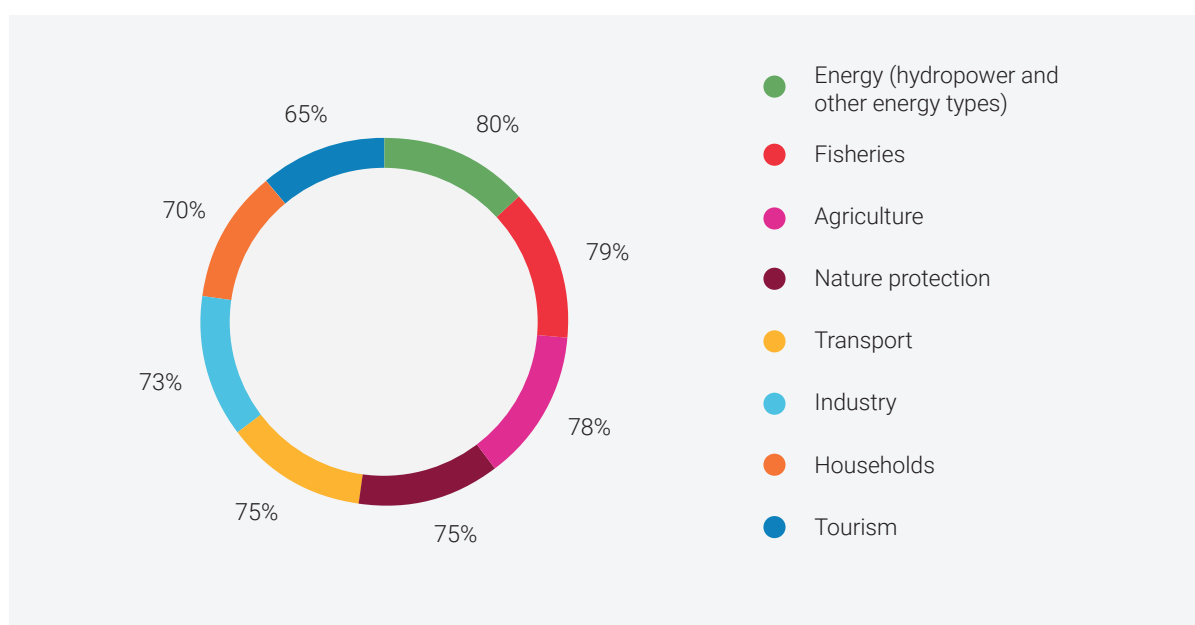
*\*\*N: Non-relevant: indicates that the figure is not available because the indicator – as defined for the global monitoring – does not apply to the circumstances of the specific country, and therefore is not reported.*

## Annex II. Selected responses from the SDG indicator 6.5.2 national reports

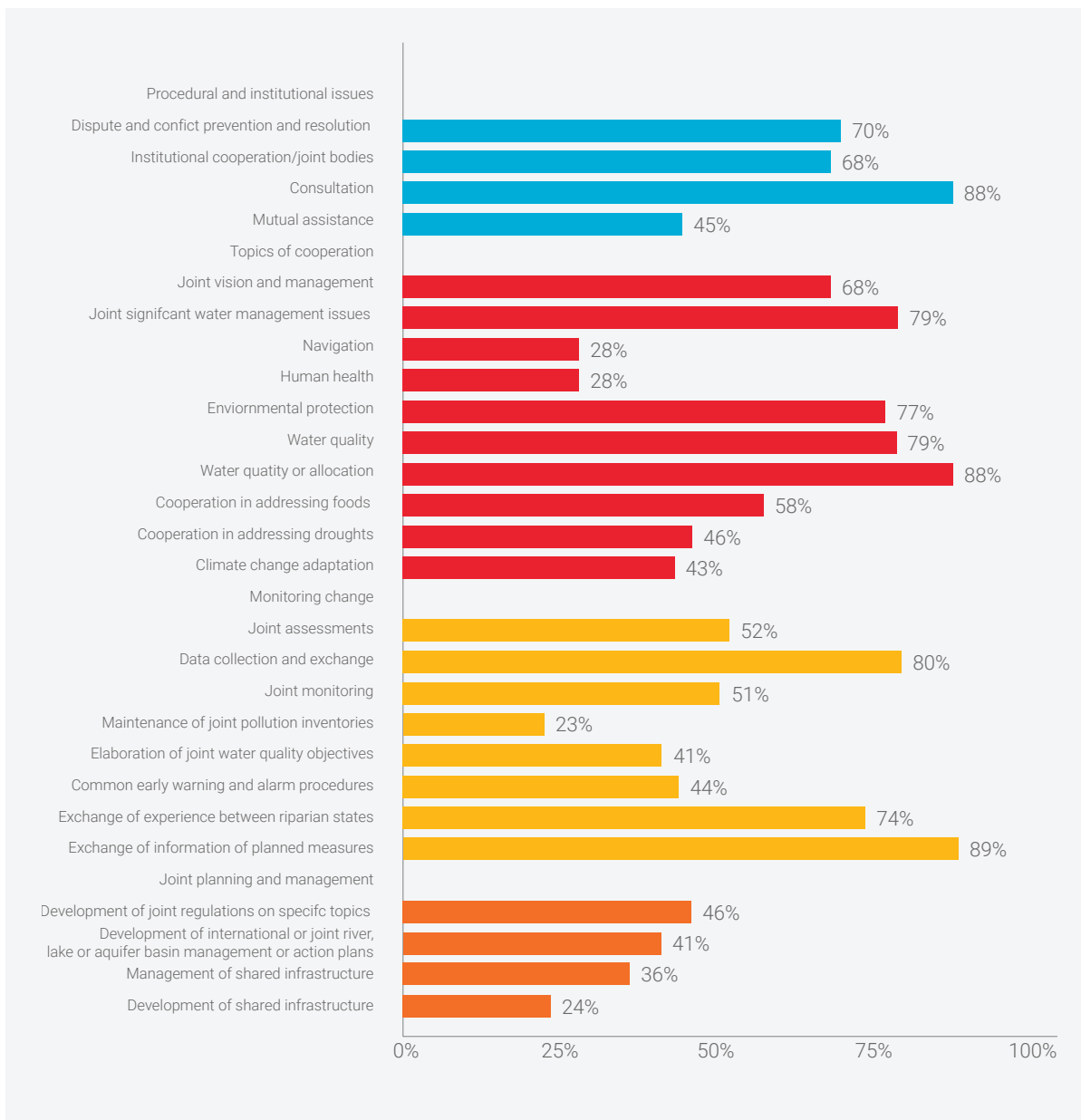
*Note: The following figures give an overview of countries' responses in their SDG indicator 6.5.2 national reports to some of the key questions related to arrangements for transboundary water cooperation and joint bodies. The data reflect the totality of responses rather than one response per country. This means that the data are weighted in favour of countries that provided multiple responses in section II of their national reports, which might be the case if they share multiple basins, and/or report both on their basin and subbasin arrangements.*

### A. Agreement and arrangements for transboundary water cooperation

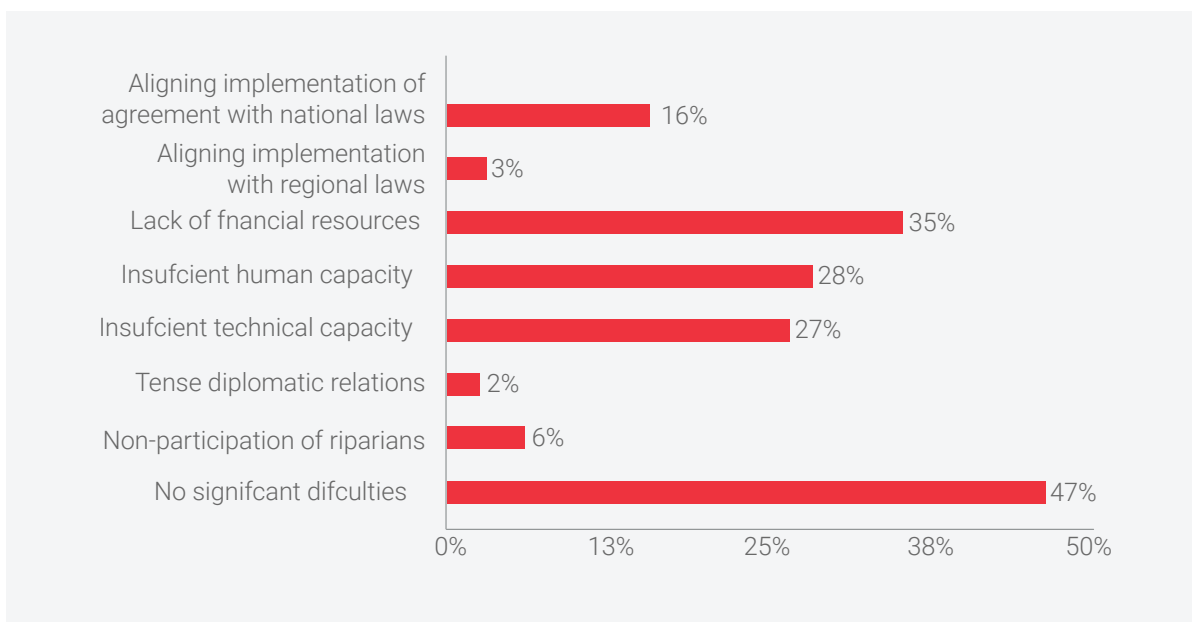
**Figure II.1. SDG indicator 6.5.2 reporting template, section II, question 2(c) – Responses to the question regarding the water uses or sectors covered by the agreement or arrangement. (Based on responses for all arrangements in force for surface waters.)**



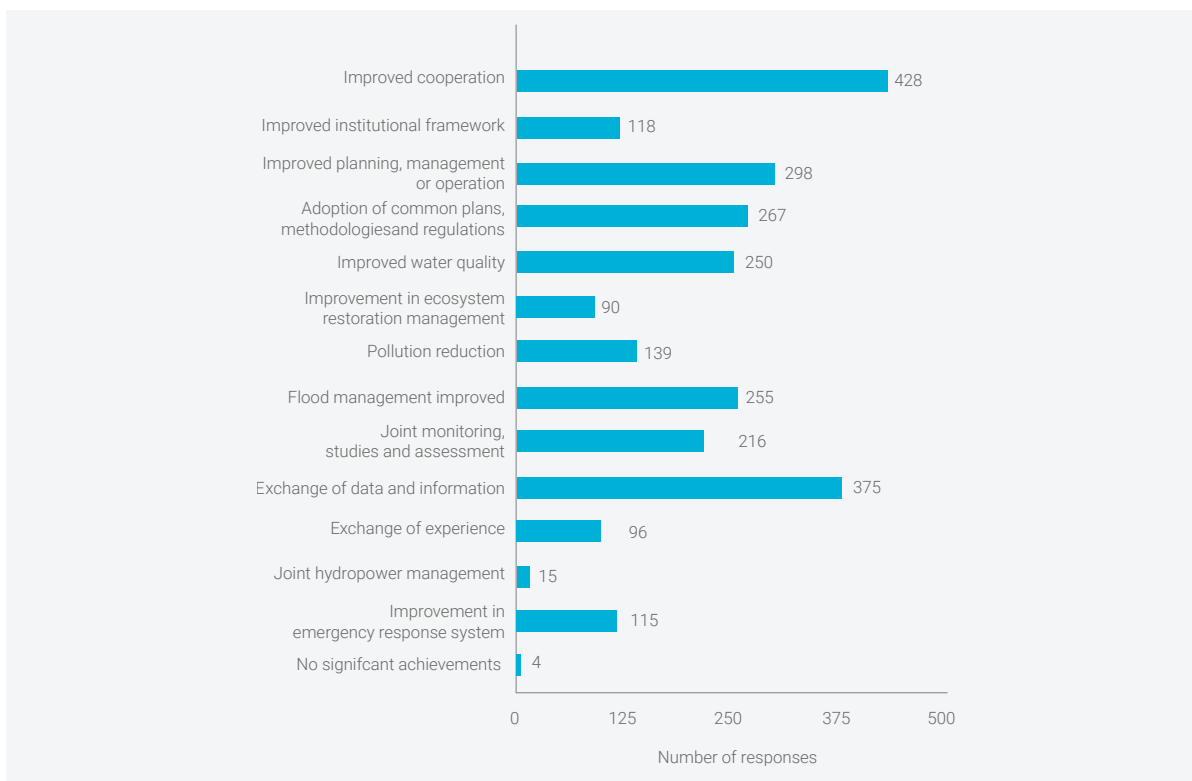
**Figure II.2. SDG indicator 6.5.2 reporting template, section II, question 2(d) – What topics or subjects of cooperation are included in the agreement or arrangement? (Based on responses for all arrangements in force for surface waters.)**



**Figure II.3. SDG indicator 6.5.2 reporting template, section II, question 2(e) – What are the main difficulties and challenges that your country faces with the agreement or arrangement and its implementation, if any? (Based on responses for all arrangements in force.)**

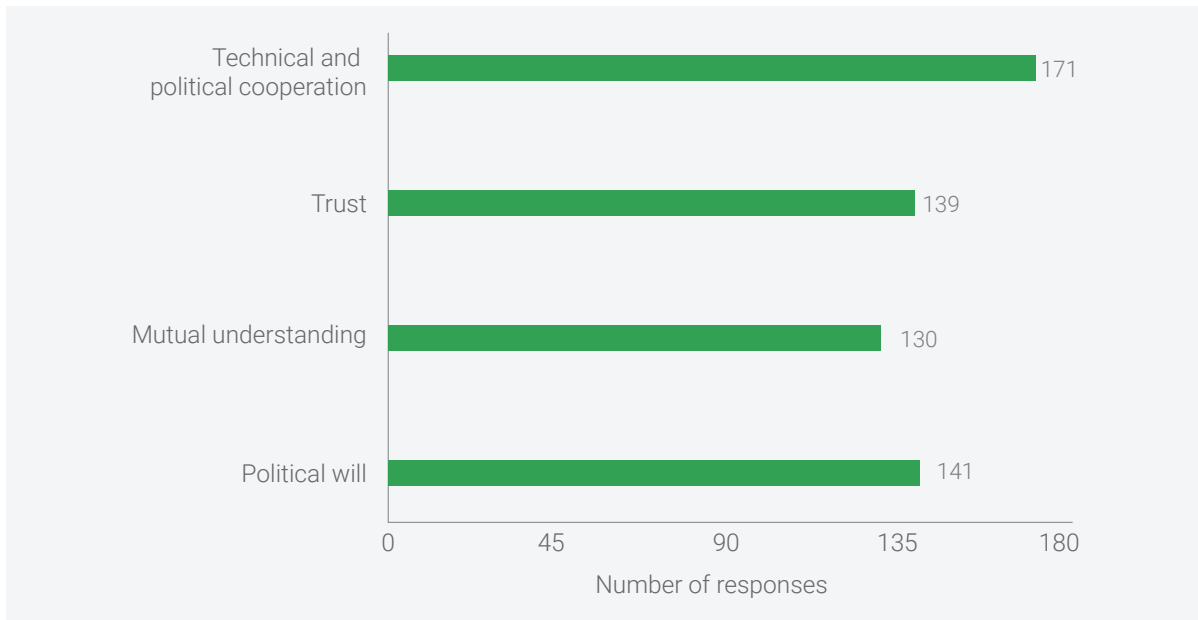


**Figure II.4. SDG indicator 6.5.2 reporting template, section II, question 2(f) – What are the main achievements in implementing the agreement or arrangement? (Open question – Based on responses for all arrangements in force.)**



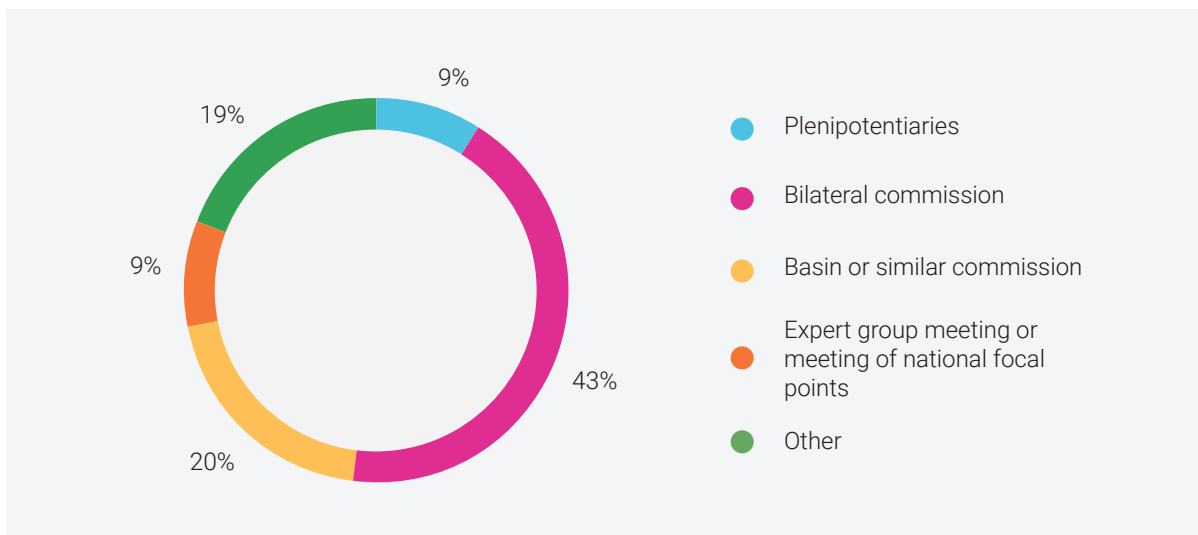


**Figure II.5. SDG indicator 6.5.2, section II, question 2(f) – Responses to the question regarding the keys to success in implementing the agreement or arrangement. (Open question – based on responses for all arrangements in force.)**

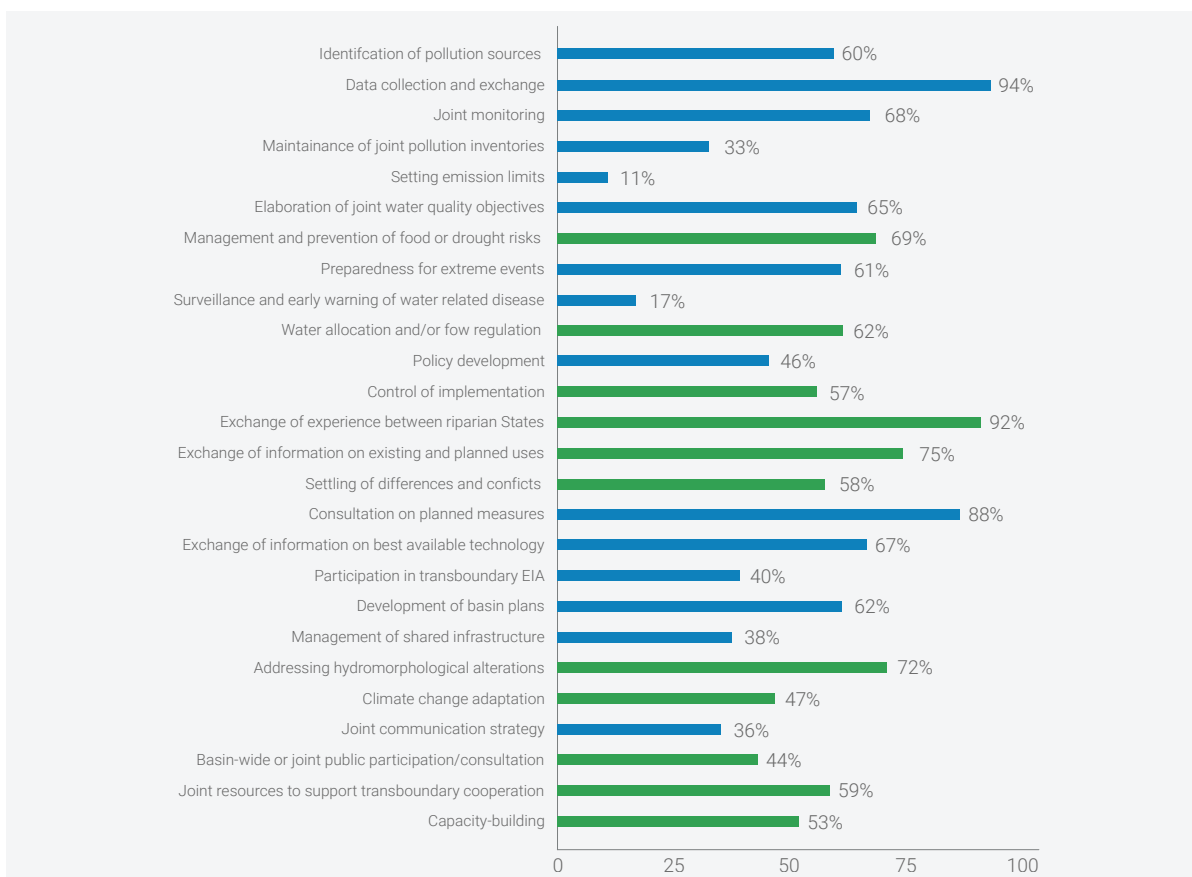


B. Joint bodies or mechanism

**Figure II.6. SDG indicator 6.5.2 reporting template, section II, question 3(a) – If there is a joint body or mechanism, which kind of joint body or mechanism? (Based on responses for all countries that are members of a joint body.)**

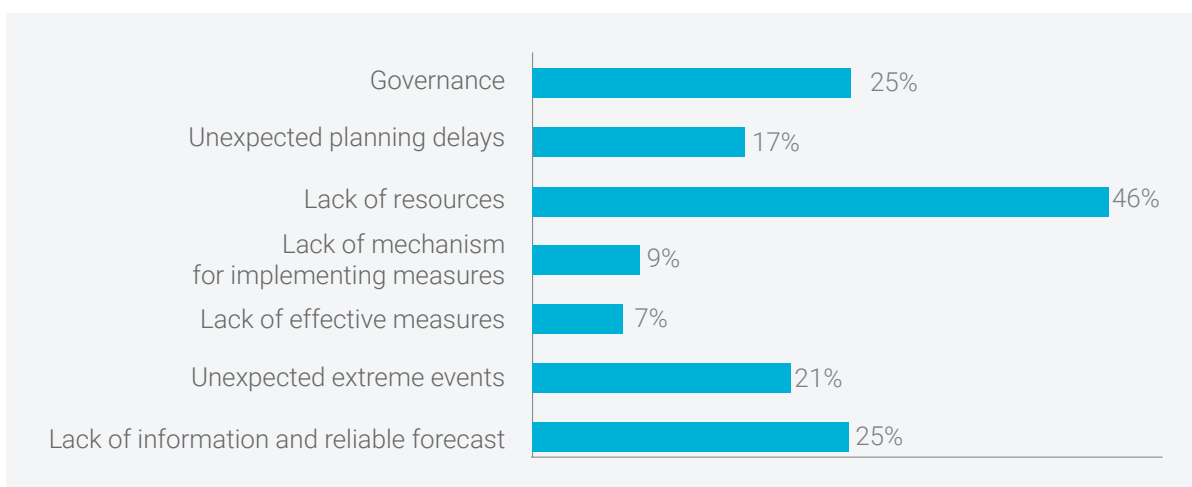


**Figure II.7. SDG indicator 6.5.2 reporting template, section II, question 3(g) – What are the tasks and activities of this joint body or mechanism? (Based on responses for all countries that are members of a joint body.)**



*Note: EIA stands for environmental impact assessment.*

**Figure II.8. SDG indicator 6.5.2 reporting template, section II, question 3(h) – What are the main difficulties and challenges that your country faces with the operation of the joint body or mechanism, if any? (Based on responses for all countries that are members of a joint body.)**



## **Annex III. Template for reporting**

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### **REPORTING ON GLOBAL SDG INDICATOR 6.5.2**

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#### **TEMPLATE of the second cycle for reporting**

##### **Content of the template**

The template is divided into four parts:

- Section I - Calculation of SDG indicator 6.5.2**
- Section II - Information on each transboundary basin or group of basins**
- Section III - General information on transboundary water management at the national level**
- Section IV - Final questions**

Country name:

## CALCULATION OF SUSTAINABLE DEVELOPMENT GOAL INDICATOR 6.5.2

### Methodology

1. Using the information gathered in section II, the information gathered in this section allows for the calculation of Sustainable Development Goal global indicator 6.5.2, which is defined as the proportion of transboundary basin area with an operational arrangement for water cooperation.
2. The step-by-step monitoring methodology for indicator 6.5.2, developed by UNECE and UNESCO in the framework of UN-Water, should be referred to for details on the necessary data, the definitions and the calculation.<sup>52</sup>
3. The value of the indicator at the national level is derived by adding up the surface area in a country of those transboundary basins (river and lake basins and aquifers) that are covered by an operational arrangement and dividing the area obtained by the aggregate total area in a country of all transboundary basins (both river and lake basins, and aquifers).
4. Transboundary basins are basins of transboundary waters, that is, of any surface waters (notably rivers, lakes) or groundwaters which mark, cross or are located on boundaries between by two or more States. For the purpose of the calculation of this indicator, for a transboundary river or lake, the basin area is determined by the extent of its catchment. For groundwater, the area to be considered is the extent of the aquifer.
5. An “arrangement for water cooperation” is a bilateral or multilateral treaty, convention, agreement or other formal arrangement among riparian countries that provides a framework for cooperation on transboundary water management.
6. For an arrangement to be considered “operational” all the following criteria need to be in place in practice:
  - (a) There is a joint body, joint mechanism or commission (e.g., a river basin organization) for transboundary cooperation (criterion 1);
  - (b) There are regular (at least once per year) formal communications between riparian countries in form of meetings (either at the political or technical level) (criterion 2);
  - (c) Joint objectives, a common strategy, a joint or coordinated management plan, or an action plan have been agreed upon by the riparian countries (criterion 3);
  - (d) There is a regular (at least once per year) exchange of data and information (criterion 4).

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<sup>52</sup> Available from the UN-Water website: <https://www.sdg6monitoring.org/indicators/target-65/indicators652/> (updated version “2020”).

## CALCULATION OF INDICATOR 6.5.2

7. Please list in the tables below the transboundary basins (rivers and lakes and aquifers) in your country's territory and provide the following information for each of them:
  - (a) The country/ies with which the basin is shared;
  - (b) The surface area of the basin (the catchment of rivers or lakes and the aquifer in the case of groundwater) within the territory of your country (in square kilometres (km<sup>2</sup>));
  - (c) Whether a map and/or a geographical information system (GIS) shapefile of the basin has been provided;
  - (d) Whether there is an arrangement in force for the basin;
  - (e) The verification of each of the four criteria to assess operability;
  - (f) The surface area of the basin within the territory of your country which is covered by a cooperation arrangement that is operational according to the above criteria.
  
8. In case an operational arrangement is in place only for a sub-basin or a portion of a basin, please list this sub-basin just after the transboundary basin it is part of. In case there is an operational arrangement for the whole basin, do not list sub-basins in the table below.

Table 1

Transboundary river or lake basin (please add rows as needed)

Name of transboundary river or lake basin/sub-basin	It is a basin or a sub-basin? <sup>53</sup>	Countries shared with	Surface area of the basin/sub-basin (in km <sup>2</sup> ) within the territory of the country	Map and/or GIS shapefile provided (yes/no)	Covered by an arrangement (entirely, partly, no)  (Ref. to questions in sect. II)	Criterion 1 applied (yes/no)  (Ref. to questions in sect. II)	Criterion 2 applied (yes/no)  (Ref. to questions in sect. II)	Criterion 3 applied (yes/no)  (Ref. to questions in sect. II)	Criterion 4 applied (yes/no)  (Ref. to questions in sect. II)	Surface area of the basin/sub-basin (in km <sup>2</sup> ) covered by an operational arrangement within the territory of the country
(A) Total surface area of transboundary basins/sub-basins of rivers and lakes covered by operational arrangements within the territory of the country (in km <sup>2</sup> )  (do not double count sub-basins)										
(B) Total surface area of transboundary basins of rivers and lakes within the territory of the country (in km <sup>2</sup> )  (do not double count sub-basins)										

53 List sub-basins after the basin they belong to.



Table 2

Transboundary aquifers (please add rows as needed)

Name of the transboundary aquifer	Countries shared with	Surface area of the aquifer <sup>54</sup> (in km <sup>2</sup> ) within the territory of the country	Map and/ or GIS shapefile provided (yes/no)	Covered by an aquifer specific arrangement (entirely, partly, no)  (Ref. to questions in sect. II)	Covered within an arrangement not specific to the aquifer <sup>55</sup> (entirely, partly, no)  (Ref. to questions in sect. II)	Criterion 1 applied (yes/no)  (Ref. to questions in sect. II)	Criterion 2 applied (yes/no)  (Ref. to questions in sect. II)	Criterion 3 applied (yes/no)  (Ref. to questions in sect. II)	Criterion 4 applied (yes/no)  (Ref. to questions in sect. II)	Surface area of the aquifer (in km <sup>2</sup> ) covered by an operational arrangement within the territory of the country
(C) Sub-total: surface area of transboundary aquifers covered by operational arrangements (in km <sup>2</sup> )										
(D) Total surface area of transboundary aquifers (in km <sup>2</sup> )										

54 For a transboundary aquifer, the extent is derived from the aquifer system delineation which is commonly done relying on information of the subsurface (notably the extent of geological formations). As a general rule, the delineation of aquifer systems is based on the delineation of the extent of the hydraulically connected water-bearing geological formations. Aquifer systems are three-dimensional objects and the aquifer area taken into account is the projection on the land surface of the system. Ideally, when different aquifer systems not hydraulically connected are vertically superposed, the different relevant projected areas are to be considered separately, unless the different aquifer systems are managed conjunctively.

55 In the text of the agreement or arrangement or in the practice.

**Indicator value for the country**

**Surface waters:**

Percentage of surface area of transboundary basins of rivers and lakes covered by an operational arrangement:

$$A/B \times 100 =$$

**Aquifers:**

Percentage of surface area of transboundary aquifers covered by an operational arrangement:

$$C/D \times 100 =$$

**Sustainable Development Goal indicator 6.5.2:**

Percentage of surface area of transboundary basins covered by an operational arrangement:

$$((A + C)/(B + D)) \times 100 =$$

**Spatial information**

If a map (or maps) of the transboundary surface water catchments and transboundary aquifers (i.e., “transboundary basins”) is available, please consider attaching them. Ideally, shapefiles of the basin and aquifer delineations that can be viewed in GIS should be sent.

**Additional information**

If the respondent has comments that clarify assumptions or interpretations made for the calculation, or the level of certainty of the spatial information, please write them here:

Does your country have transboundary agreements or arrangements for the protection and/or management of transboundary waters (i.e., rivers, lakes or groundwater), whether bilateral or multilateral?

Yes  No

If yes, list the bilateral and multilateral agreements or arrangements (listing for each of the countries concerned): [fill in]

**II. Questions for each transboundary basin, sub-basin, part of a basin, or group of basins (river, lake or aquifer)**

Please complete this second section for each transboundary basin (river or lake basin, or aquifer), sub-basin, part of a basin or a group of basins covered by the same agreement or arrangement where conditions are similar.<sup>56</sup> In some instances, you may provide information on both a basin and one or more of its sub-basins or parts thereof, for example, where you have agreements<sup>57</sup> or arrangements on both the basin and its sub-basin. You may coordinate your responses with other States with which your country shares transboundary waters, or even prepare a joint report. General information on transboundary water management at the national level should be provided in section III and not repeated here.

Please reproduce this whole section with its questions for each transboundary basin, sub-basin, part of a basin or group of basins for which you will provide a reply.

**Name of the transboundary basin, sub-basin, part of a basin or group of basins:**

List of the riparian States: [fill in]

**In the case of an aquifer, what is the nature of the aquifer and its relation with the river or lake basin:**

Unconfined aquifer connected to a river or lake

Unconfined aquifer with no or limited relation with surface water

Confined aquifer connected to surface water

Confined aquifer with no or limited relation with surface water

Other

Please describe: [fill in]

Unknown

**Percentage of your country's territory within the basin, sub-basin, part of a basin or group of basins: [fill in]**

1. Is there one or more transboundary (bilateral or multilateral) agreement(s) or arrangement(s) on this basin, sub-basin, part of a basin or group of basins?

One or more agreements or arrangements exist and are in force

Agreement or arrangement developed but not in force

Agreement or arrangement developed, but not in force for all riparians

*Please insert the name of the agreement(s) or arrangement(s):*

Agreement or arrangement is under development

No agreement or arrangement

*If there is no agreement or arrangement or it is not in force, please explain briefly why not and provide information on any plans to address the situation: [fill in]*

**If there is no agreement or arrangement and no joint body or mechanism for the transboundary basin, sub-basin, part of a basin or group of basins then jump to question 4; if there is no agreement or arrangement, but a joint body or mechanism then go to question 3.**

**Questions 2 and 3 to be completed for each bilateral or multilateral agreement or arrangement in force in the transboundary basin, sub-basin, part of a basin or group of basins.**

2. (a) Does this agreement or arrangement specify the area subject to cooperation?

Yes  No

<sup>56</sup> In principle, section II should be submitted for every transboundary basin, river, lake or aquifer, in the country, but States may decide to group basins in which their share is small or leave out basins in which their share is very minor, e.g., below 1 per cent.

<sup>57</sup> In section II, "agreement" covers all kinds of treaties, conventions and agreements ensuring cooperation in the field of transboundary waters. Section II can also be completed for other types of arrangements, such as memorandums of understanding.

If yes, does it cover the entire basin or group of basins and all riparian States?

Yes  No

Additional explanations? [fill in]

Or, if the agreement or arrangement relates to a sub-basin, does it cover the entire sub-basin?

Yes  No

Additional explanations? [fill in]

Which States (including your own) are bound by the agreement or arrangement? *(Please list)*:

(b) If the agreement or arrangement relates to a river or lake basin or sub-basin, does it also cover aquifers?

Yes  No

If yes, please list the aquifers covered by the agreement or arrangement: [fill in]

(c) What is the sectoral scope of the agreement or arrangement?

All water uses

A single water use or sector

Several water uses or sectors

*If one or several water uses or sectors, please list (check as appropriate):*

**Water uses or sectors**

Industry

Agriculture

Transport (e.g., navigation)

Households

Energy: hydropower and other energy types

Fisheries

Tourism

Nature protection

Other *(please list)*: [fill in]

(d) What topics or subjects of cooperation are included in the agreement or arrangement?

**Procedural and institutional issues**

Dispute and conflict prevention and resolution

Institutional cooperation (joint bodies)

Consultation on planned measures

Mutual assistance

**Topics of cooperation**

Joint vision and management objectives

Joint significant water management issues

- Navigation
- Human health
- Environmental protection (ecosystem)
- Water quality
- Water quantity or allocation
- Cooperation in addressing floods
- Cooperation in addressing droughts
- Climate change adaptation

**Monitoring and exchange**

- Joint assessments
- Data collection and exchange
- Joint monitoring
- Maintenance of joint pollution inventories
- Elaboration of joint water quality objectives
- Common early warning and alarm procedures
- Exchange of experience between riparian States
- Exchange of information on planned measures

**Joint planning and management**

- Development of joint regulations on specific topics
- Development of international or joint river, lake or aquifer basin management or action plans
- Management of shared infrastructure
- Development of shared infrastructure
- Other (*please list*): [fill in]

(e) What are the main difficulties and challenges that your country faces with the agreement or arrangement and its implementation, if any?

- Aligning implementation of agreement or arrangement with national laws, policies and programmes
- Aligning implementation of agreement or arrangement with regional laws, policies and programmes
- Lack of financial resources
- Insufficient human capacity
- Insufficient technical capacity
- Tense diplomatic relations
- Non-participation of certain riparian countries in the agreement
- No significant difficulties

Other (*please describe*): [fill in]

(f) What are the main achievements in implementing the agreement or arrangement and what were the keys to achieving such success?

(g) Please attach a copy of the agreement or arrangement or provide the web address of the document (*please attach document or insert web address, if applicable*): [fill in]

3. Is your country a member of any joint body or mechanism for this agreement or arrangement?

Yes  No

If no, why not? (*please explain*): [fill in]

**Where there is a joint body or mechanism**

(a) If there is a joint body or mechanism, which kind of joint body or mechanism (*please tick one*)?

Plenipotentiaries

Bilateral commission

Basin or similar commission

Expert group meeting or meeting of national focal points

Other (*please describe*): [fill in]

(b) Does the joint body or mechanism cover the entire transboundary basin, sub-basin, part of a basin or group of basins?

Yes  No

(c) Which States (including your own) are members of the joint body or mechanism? (*Please list*): [fill in]

(d) Are there any riparian States that are not members of the joint body or mechanism? (*please list*): [fill in]

(e) If not all riparian States are members of the joint body or mechanism how does the joint body or mechanism cooperate with them?

No cooperation

They have observer status

Other (*please describe*): [fill in]

(f) Does the joint body or mechanism have any of the following features (*please tick the ones applicable*)?

A secretariat

*If the secretariat is a permanent one, is it a joint secretariat or does each country host its own secretariat? (Please describe):*

A subsidiary body or bodies

*Please list (e.g., working groups on specific topics):*

Other features (*please list*): [fill in]

(g) What are the tasks and activities of this joint body or mechanism?<sup>58</sup>

Identification of pollution sources

Data collection and exchange

Joint monitoring

Maintenance of joint pollution inventories

<sup>58</sup> This may include tasks according to the agreement or tasks added by the joint body, or its subsidiaries. Both tasks which joint bodies coordinate and tasks which they implement should be included.



- Setting emission limits
- Elaboration of joint water quality objectives
- Management and prevention of flood or drought risks
- Preparedness for extreme events, e.g., common early warning and alarm procedures
- Surveillance and early warning of water related disease
- Water allocation and/or flow regulation
- Policy development
- Control of implementation
- Exchange of experience between riparian States
- Exchange of information on existing and planned uses of water and related installations
- Settling of differences and conflicts
- Consultations on planned measures
- Exchange of information on best available technology
- Participation in transboundary EIA
- Development of river, lake or aquifer basin management or action plans
- Management of shared infrastructure
- Addressing hydromorphological alterations
- Climate change adaptation
- Joint communication strategy
- Basin-wide or joint public participation and consultation of, for example, basin management plans
- Joint resources to support transboundary cooperation
- Capacity-building
- Any other tasks (*please describe*): [fill in]
- (h) What are the main difficulties and challenges that your country faces with the operation of the joint body or mechanism, if any?
- Governance issues
- Please describe, if any:* [fill in]
- Unexpected planning delays
- Please describe, if any:* [fill in]
- Lack of resources
- Please describe, if true:* [fill in]
- Lack of mechanism for implementing measures
- Please describe, if true:* [fill in]
- Lack of effective measures
- Please describe, if true:* [fill in]
- Unexpected extreme events
- Please describe, if any:* [fill in]

Lack of information and reliable forecasts

*Please describe, if any:* [fill in]

Others (*please list and describe, as appropriate*):

(i) Does the joint body or mechanism, or its subsidiary bodies meet regularly?

Yes  No

If yes, how frequently does it meet?

More than once per year

Once per year

Less than once per year

(j) What are the main achievements with regards to the joint body or mechanism? [fill in]

(k) Did the joint body or mechanism ever invite a non-riparian coastal State to cooperate?

Yes  No

*If yes, please give details. If no, why not, e.g. are the relevant coastal States also riparian States and therefore already members of the joint body or mechanism?* [fill in]

4. Have joint objectives, a common strategy, a joint or coordinated management plan or action plan been agreed for the basin, sub-basin, part of a basin or group of basins?

Yes  No

*If yes, please provide further details:* [fill in]

5. How is the transboundary basin, sub-basin, part of a basins or group of basins protected, including the protection of ecosystems, in the context of sustainable and rational water use?

Regulation of urbanization, deforestation, and sand and gravel extraction.

Environmental flow norms, including consideration of levels and seasonality

Water quality protection, e.g. nitrates, pesticides, faecal coliforms, heavy metals

Water-related species and habitats protection

Other measures (*please describe*): [fill in]

6. (a) Does your country regularly exchange information and data with other riparian States in the basin, sub-basin, part of a basin or group of basins?

Yes  No

(b) If yes, how often:

More than once per year

Once per year

Less than once per year

(c) Please describe how information is exchanged (e.g. in connection with meetings of joint bodies): [fill in]

(d) If yes, on what subjects are information and data exchanged?

- Environmental conditions
- Research activities and application of best available techniques
- Emission monitoring data
- Planned measures taken to prevent, control or reduce transboundary impacts
- Point source pollution sources
- Diffuse pollution sources
- Existing hydromorphological alterations (dams, etc.)
- Flows or water levels (including groundwater levels)
- Water abstractions
- Climatological information
- Future planned measures with transboundary impacts, such as infrastructure development

Other subjects (*please list*): [fill in]

Other comments, e.g. spatial coverage of data and information exchange:

(e) Is there a shared database or information platform?

Yes  No

(f) Is the database publicly available?

Yes  No

*If yes, please provide the web address:* [fill in]

(g) What are the main difficulties and challenges to data exchange, if applicable?

- Frequency of exchanges
- Timing of exchanges
- Comparability of data and information
- Limited spatial coverage
- Inadequate resources (technical and/or financial)

Other (*please describe*): [fill in]

Additional comments: [fill in]

(h) What are the main benefits of data exchange on the basin, sub-basin, part of a basin or group of basins? (*please describe*): [fill in]

7. Do the riparian States carry out joint monitoring in the transboundary basin, sub-basin, part of a basin or group of basins?

Yes  No

(a) If yes, what does the joint monitoring cover?

	<b>Hydrological</b>	<b>Ecological</b>	<b>Chemical</b>
Border surface waters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Hydrological	Ecological	Chemical
Surface waters in the entire basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surface waters on the main watercourse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surface waters in part of the basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
please describe: [fill in]			
Transboundary aquifer(s) (connected or unconnected)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquifer(s) in the territory of one riparian hydraulically connected to a transboundary river or lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) If joint monitoring is carried out, how is this done?			
National monitoring stations connected through a network or common stations			<input type="checkbox"/>
<i>Please describe: [fill in]</i>			
Joint and agreed methodologies			<input type="checkbox"/>
<i>Please describe: [fill in]</i>			
Joint sampling			<input type="checkbox"/>
<i>Please describe: [fill in]</i>			
Common monitoring network			<input type="checkbox"/>
<i>Please describe: [fill in]</i>			
Common agreed parameters			<input type="checkbox"/>
<i>Please describe: [fill in]</i>			
(c) Please describe the main achievements regarding joint monitoring, if any: [fill in]			
(d) Please describe any difficulties experienced with joint monitoring: [fill in]			
8.	Do the riparian States carry out joint assessment of the transboundary basin, sub-basin, part of a basin or group of basins?		
	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
	If yes, please provide the date of the last or only assessment, the frequency and scope (e.g., surface waters or groundwaters only, pollution sources, etc.) of the assessment, and assessment methodology applied: [fill in]		
9.	Have the riparian States agreed to use joint water quality standards?		
	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
	<i>If yes, what standards have been applied, e.g. international or regional standards (please specify which), or have national standards of the riparian States been applied? [fill in]</i>		
10.	What are the measures implemented to prevent or limit the transboundary impact of accidental pollution?		
	Notification and communication		<input type="checkbox"/>
	Coordinated or joint early warning or alarm system for accidental		<input type="checkbox"/>
	water pollution		<input type="checkbox"/>

Other (please list): [fill in]

No measures

If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

11. What are the measures implemented to prevent or limit the transboundary impact of extreme weather events and climate change?

Notification and communication

Coordinated or joint alarm system for floods

Coordinated or joint alarm system for droughts

Joint climate change adaptation strategy

Joint disaster risk reduction strategy

Other (please list):

No measures

If not, why not? What difficulties does your country face in putting in place such measures?:

12. Are procedures in place for mutual assistance in case of a critical situation?

Yes  No

If yes, please provide a brief summary: [fill in]

13. Are the public or relevant stakeholders involved in transboundary water management in the basin, sub-basin, part of a basin or group of basins?

Yes  No

If yes, how? (please tick all applicable)

Stakeholders have observer status in a joint body or mechanism

Stakeholders have an advisory role in the joint body

Stakeholders have a decision-making role in the joint body

If yes, please specify the stakeholders for the joint body or mechanism: [fill in]

Intergovernmental organizations

Private sectors organizations or associations

Water user groups or associations

Academic or research institutions

Other non-governmental organizations

General public

Other (please specify): [fill in]

Availability of information to the public

Consultation on planned measures or river basin management plans<sup>59</sup>

<sup>59</sup> Or, where applicable, aquifer management plans.

Public involvement

Other (please specify):

**Please remember to complete section II for each of the transboundary basins, sub-basin, part of a basin or group of basins. Please also remember to attach copies of agreements or arrangements, if any.**

### III. Water management at the national level

In this section, you are requested to provide general information on water management at the national level as it relates to transboundary waters. Information on specific transboundary basins, sub-basins, part of basins and groups of basins, should be presented in section II and not repeated here.

1. (a) Does your country's national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce any transboundary impact?

Yes  No

If yes, please briefly describe the main national laws, policies, action plans and strategies: [fill in]

- (b) Does your country's legislation provide for the following principles?

Precautionary principle Yes  No

Polluter pays principle Yes  No

Sustainable development Yes  No

User pays principle Yes  No

If yes, please briefly describe how these principles are implemented at the national level: [fill in]

- (c) Does your country have a national licensing or permitting system for wastewater discharges and other point source pollution? (e.g., in industry, mining, energy, municipal, wastewater management or other sectors)?

Yes  No

If yes, for which sectors?

Industry

Mining

Energy

Municipal

Livestock raising

Aquaculture

Other (please list): [fill in]

Please briefly describe the licensing or permitting system, indicating whether the system provides for setting emission limits based on best available technology?

If yes, for which sectors? (please list): [fill in]

If not, please explain why not (giving the most important reasons) or provide information if there are plans to introduce a licensing or permitting system:



(d) Are the authorized discharges monitored and controlled?

Yes  No

*If yes, how? (Please tick the ones applicable):*

Monitoring of discharges

Monitoring of physical and chemical impacts on water

Monitoring of ecological impacts on water

Conditions on permits

Inspectorate

Other means (*please list*):

*If your country does not have a discharge monitoring system, please explain why not or provide information if there are plans to introduce a discharge monitoring system: [fill in]*

(e) What are the main measures which your country takes to reduce diffuse sources of water pollution on transboundary waters (e.g., from agriculture, transport, forestry or aquaculture)? The measures listed below relate to agriculture, but other sectors may be more significant. Please be sure to include these under "others":

#### **Legislative measures**

Norm for uses of fertilizers

Norms for uses of manure

Permitting system

Bans on or norms for use of pesticides

Others (*please list*): [fill in]

#### **Economic and financial measures**

Monetary incentives

Environmental taxes (such as fertilizer taxes)

Others (*please list*): [fill in]

**Agricultural extension services**

#### **Technical measures**

*Source control measures*

Crop rotation

Tillage control

Winter cover crops

Others (*please list*): [fill in]

*Other measures*

Buffer/filter strips

Wetland reconstruction

- Sedimentation traps
- Chemical measures
- Others (*please list*): [fill in]

**Other types of measures**

*If yes, please list:*

- (f) What are the main measures which your country takes to enhance water resources allocation and use efficiency?

*Please tick as appropriate (not all might be relevant)*

- A regulatory system regarding water abstraction
- Monitoring and control of abstractions
- Water rights are defined
- Water allocation priorities are listed
- Water-saving technologies
- Advanced irrigation techniques
- Demand management activities
- Other means (*please list*)

- (g) Does your country apply the ecosystems approach?

Yes  No

*If yes, please describe how:*

- (h) Does your country take specific measures to prevent the pollution of groundwaters?

Yes  No

*If yes, please briefly describe the most important measures:*

2. Do your national laws require transboundary environmental impact assessment (EIA)?

Yes  No

*If yes, please briefly describe the legislative basis, and any related implementing procedures.*

*If not, do other measures provide for transboundary EIA?*

**IV. Final questions**

1. What are the main challenges your country faces in cooperating on transboundary waters?

- Differences between national administrative and legal frameworks
- Lack of relevant data and information
- Difficulties in data and information exchange
- Sectoral fragmentation at the national level
- Language barrier

- Resource constraints
- Environmental pressures, e.g. extreme events
- Sovereignty concerns

Please list other challenges and/or provide further details: [fill in]

2. What have been the main achievements in cooperating on transboundary waters?

- Improved water management
- Enhanced regional integration, i.e. beyond water
- Adoption of cooperative arrangements
- Adoption of joint plans and programmes
- Long-lasting and sustained cooperation
- Financial support for joint activities
- Stronger political will for transboundary water cooperation
- Better knowledge and understanding
- Dispute avoidance
- Stakeholder engagement

Please list other achievements, keys to achieving success, and/or provide concrete examples: [fill in]

3. Please indicate which institutions were consulted during the completion of the questionnaire

- Joint body or mechanism
- Other riparian or aquifer countries
- National water management authority
- Environment agency/ authority
- Basin authority (national)
- Local or provincial government
- Geological survey (national)
- Non-water specific ministries, e.g. foreign affairs, finance, forestry and energy
- Civil society organizations
- Water user associations
- Private sector

Other (please list): [fill in]

Please briefly describe the process by which the questionnaire was completed: [fill in]

4. If you have any other comments please add them here (*insert comments*): [fill in]

5. Name and contact details of the person(s) who filled out the questionnaire (*please insert*): [fill in]

**Date:**

**Signature:**

Thank you very much for taking the time to complete this report.

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# Learn more about progress towards SDG 6

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## 6 CLEAN WATER AND SANITATION



How is the world doing on **Sustainable Development Goal 6**? View, analyse and download global, regional and national water and sanitation data: <https://www.sdq6data.org/>

Sustainable Development Goal (SDG) 6 expands the Millennium Development Goal (MDG) focus on drinking water and basic sanitation to include the more holistic management of water, wastewater and ecosystem resources, acknowledging the importance of an enabling environment. Bringing these aspects together is an initial step towards addressing sector fragmentation and enabling coherent and sustainable management. It is also a major step towards a sustainable water future.

Monitoring progress towards SDG 6 is key to achieving this SDG. High-quality data help policymakers and decision makers at all levels of government to identify challenges and opportunities, to set priorities for more effective and efficient implementation, to communicate progress and ensure accountability, and to generate political, public and private sector support for further investment.

The 2030 Agenda for Sustainable Development specifies that global follow-up and review shall primarily be based on national official data sources. The data are compiled and validated by the United Nations custodian agencies, who contact country focal points every two to three years with requests for new data, while also providing capacity-building support. The last global “data drive” took place in 2020, resulting in status updates on nine of the global indicators for SDG 6 (please see below). These reports provide a detailed analysis of current status, historical progress and acceleration needs regarding the SDG 6 targets.

To enable a comprehensive assessment and analysis of overall progress towards SDG 6, it is essential to bring together data on all the SDG 6 global indicators and other key social, economic and environmental parameters. This is exactly what the SDG 6 Data Portal does, enabling global, regional and national actors in various sectors to see the bigger picture, thus helping them make decisions that contribute to all SDGs. UN-Water also publishes synthesized reporting on overall progress towards SDG 6 on a regular basis.





<p><b>Summary Progress Update 2021: SDG 6 – Water and Sanitation for All</b></p>	<p>Based on latest available data on all SDG 6 global indicators. Published by UN-Water through the UN-Water Integrated Monitoring Initiative for SDG 6.</p> <p><a href="https://www.unwater.org/publications/summary-progress-update-2021-sdg-6-water-and-sanitation-for-all/">https://www.unwater.org/publications/summary-progress-update-2021-sdg-6-water-and-sanitation-for-all/</a></p>
<p><b>Progress on Household Drinking Water, Sanitation and Hygiene – 2021 Update</b></p>	<p>Based on latest available data on SDG indicators 6.1.1 and 6.2.1. Published by World Health Organization (WHO) and United Nations Children’s Fund (UNICEF).</p> <p><a href="https://www.unwater.org/publications/who-unicef-joint-monitoring-program-for-water-supply-sanitation-and-hygiene-jmp-progress-on-household-drinking-water-sanitation-and-hygiene-2000-2020/">https://www.unwater.org/publications/who-unicef-joint-monitoring-program-for-water-supply-sanitation-and-hygiene-jmp-progress-on-household-drinking-water-sanitation-and-hygiene-2000-2020/</a></p>
<p><b>Progress on Wastewater Treatment – 2021 Update</b></p>	<p>Based on latest available data on SDG indicator 6.3.1. Published by WHO and United Nations Human Settlements Programme (UN-Habitat) on behalf of UN-Water.</p> <p><a href="https://www.unwater.org/publications/progress-on-wastewater-treatment-631-2021-update/">https://www.unwater.org/publications/progress-on-wastewater-treatment-631-2021-update/</a></p>
<p><b>Progress on Ambient Water Quality – 2021 Update</b></p>	<p>Based on latest available data on SDG indicator 6.3.2. Published by United Nations Environment Programme (UNEP) on behalf of UN-Water.</p> <p><a href="https://www.unwater.org/publications/progress-on-ambient-water-quality-632-2021-update/">https://www.unwater.org/publications/progress-on-ambient-water-quality-632-2021-update/</a></p>
<p><b>Progress on Water-Use Efficiency – 2021 Update</b></p>	<p>Based on latest available data on SDG indicator 6.4.1. Published by Food and Agriculture Organization of the United Nations (FAO) on behalf of UN-Water.</p> <p><a href="https://www.unwater.org/publications/progress-on-water-use-efficiency-641-2021-update/">https://www.unwater.org/publications/progress-on-water-use-efficiency-641-2021-update/</a></p>
<p><b>Progress on Level of Water Stress – 2021 Update</b></p>	<p>Based on latest available data on SDG indicator 6.4.2. Published by FAO on behalf of UN-Water.</p> <p><a href="https://www.unwater.org/publications/progress-on-level-of-water-stress-642-2021-update/">https://www.unwater.org/publications/progress-on-level-of-water-stress-642-2021-update/</a></p>
<p><b>Progress on Integrated Water Resources Management – 2021 Update</b></p>	<p>Based on latest available data on SDG indicator 6.5.1. Published by UNEP on behalf of UN-Water.</p> <p><a href="https://www.unwater.org/publications/progress-on-integrated-water-resources-management-651-2021-update/">https://www.unwater.org/publications/progress-on-integrated-water-resources-management-651-2021-update/</a></p>
<p><b>Progress on Transboundary Water Cooperation – 2021 Update</b></p>	<p>Based on latest available data on SDG indicator 6.5.2. Published by United Nations Economic Commission for Europe (UNECE) and United Nations Educational, Scientific and Cultural Organization (UNESCO) on behalf of UN-Water.</p> <p><a href="https://www.unwater.org/publications/progress-on-transboundary-water-cooperation-652-2021-update/">https://www.unwater.org/publications/progress-on-transboundary-water-cooperation-652-2021-update/</a></p>
<p><b>Progress on Water-related Ecosystems – 2021 Update</b></p>	<p>Based on latest available data on SDG indicator 6.6.1. Published by UNEP on behalf of UN-Water.</p> <p><a href="https://www.unwater.org/publications/progress-on-water-related-ecosystems-661-2021-update/">https://www.unwater.org/publications/progress-on-water-related-ecosystems-661-2021-update/</a></p>
<p><b>National Systems to Support Drinking-Water, Sanitation and Hygiene – Global Status Report 2019</b></p>	<p>Based on latest available data on SDG indicators 6.a.1 and 6.b.1. Published by WHO through the UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) on behalf of UN-Water.</p> <p><a href="https://www.unwater.org/publication_categories/glaas/">https://www.unwater.org/publication_categories/glaas/</a></p>

# UN-Water reports

**UN-Water coordinates the efforts of United Nations entities and international organizations working on water and sanitation issues. By doing so, UN-Water seeks to increase the effectiveness of the support provided to Member States in their efforts towards achieving international agreements on water and sanitation. UN-Water publications draw on the experience and expertise of UN-Water’s Members and Partners.**

<p><b>SDG 6 Progress Update 2021 – summary</b></p>	<p>This summary report provides an executive update on progress towards all of SDG 6 and identifies priority areas for acceleration. The report, produced by the UN-Water Integrated Monitoring Initiative for SDG 6, present new country, region and global data on all the SDG 6 global indicators.</p>
<p><b>SDG 6 Progress Update 2021 – 8 reports, by SDG 6 global indicator</b></p>	<p>This series of reports provides an in-depth update and analysis of progress towards the different SDG 6 targets and identifies priority areas for acceleration: Progress on Drinking Water, Sanitation and Hygiene (WHO and UNICEF); Progress on Wastewater Treatment (WHO and UN-Habitat); Progress on Ambient Water Quality (UNEP); Progress on Water-use Efficiency (FAO); Progress on Level of Water Stress (FAO); Progress on Integrated Water Resources Management (UNEP); Progress on Transboundary Water Cooperation (UNECE and UNESCO); Progress on Water-related Ecosystems (UNEP). The reports, produced by the responsible custodian agencies, present new country, region and global data on the SDG 6 global indicators.</p>
<p><b>UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS)</b></p>	<p>GLAAS is produced by the World Health Organization (WHO) on behalf of UN-Water. It provides a global update on the policy frameworks, institutional arrangements, human resource base, and international and national finance streams in support of water and sanitation. It is a substantive input into the activities of Sanitation and Water for All (SWA) as well as the progress reporting on SDG 6 (see above).</p>
<p><b>United Nations World Water Development Report</b></p>	<p>The United Nations World Water Development Report (WWDR) is UN-Water’s flagship report on water and sanitation issues, focusing on a different theme each year. The report is published by UNESCO, on behalf of UN-Water and its production is coordinated by the UNESCO World Water Assessment Programme. The report gives insight on main trends concerning the state, use and management of freshwater and sanitation, based on work done by the Members and Partners of UN-Water. Launched in conjunction with World Water Day, the report provides decision-makers with knowledge and tools to formulate and implement sustainable water policies. It also offers best practices and in-depth analyses to stimulate ideas and actions for better stewardship in the water sector and beyond.</p>

<p><b>The progress reports of the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP)</b></p>	<p>The JMP is affiliated with UN-Water and is responsible for global monitoring of progress towards SDG6 targets for universal access to safe and affordable drinking water and adequate and equitable sanitation and hygiene services. Every two years the JMP releases updated estimates and progress reports for WASH in households, schools and health care facilities.</p>
<p><b>Policy and Analytical Briefs</b></p>	<p>UN-Water’s Policy Briefs provide short and informative policy guidance on the most pressing freshwater-related issues that draw upon the combined expertise of the United Nations system. Analytical Briefs provide an analysis of emerging issues and may serve as basis for further research, discussion and future policy guidance.</p>

## UN-Water planned publications

- **UN-Water Policy Brief on Gender and Water**
- **Update of UN-Water Policy Brief on Transboundary Waters Cooperation**
- **UN-Water Analytical Brief on Water Efficiency**

More information: <https://www.unwater.org/unwater-publications/>



Most of the world's water resources are shared between countries. These transboundary waters create social, economic, environmental and political interdependencies that make cooperation a precondition to sustainable development and peace. SDG indicator 6.5.2 measures cooperation on both transboundary river and lake basins, and transboundary aquifers. In this report, you can learn more about the progress of transboundary water cooperation.

This report is part of a series that tracks progress towards the various targets set out in SDG 6 using the SDG global indicators. To learn more about water and sanitation in the 2030 Agenda for Sustainable Development, and the Integrated Monitoring Initiative for SDG 6, visit the website: [www.sdg6monitoring.org](http://www.sdg6monitoring.org).

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